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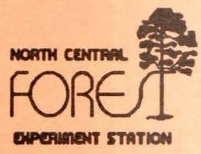
The Eastwide Forest Inventory Data Base: Users Manual

Mark H. Hansen, Thomas Frieswyk, Joseph F. Glover, and John F. Kelly

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.



Foreword

Forest Inventory and Analysis (FIA) is a continuing endeavor mandated by Congress in the Forest and Rangeland Renewable Resources Planning Act of 1974 and the McSweeney-McNary Forest Research Act of 1928. Its objective is to periodically determine the extent, condition, and volume of timber, growth, and depletions of the Nation's forest land. This kind of up-to-date information is essential to frame realistic forest policies and programs. USDA Forest Service regional experiment stations are responsible for conducting these inventories and publishing summary reports for individual States.

Forest inventories for the Eastern United States are conducted by four experiment stations (fig. 1).

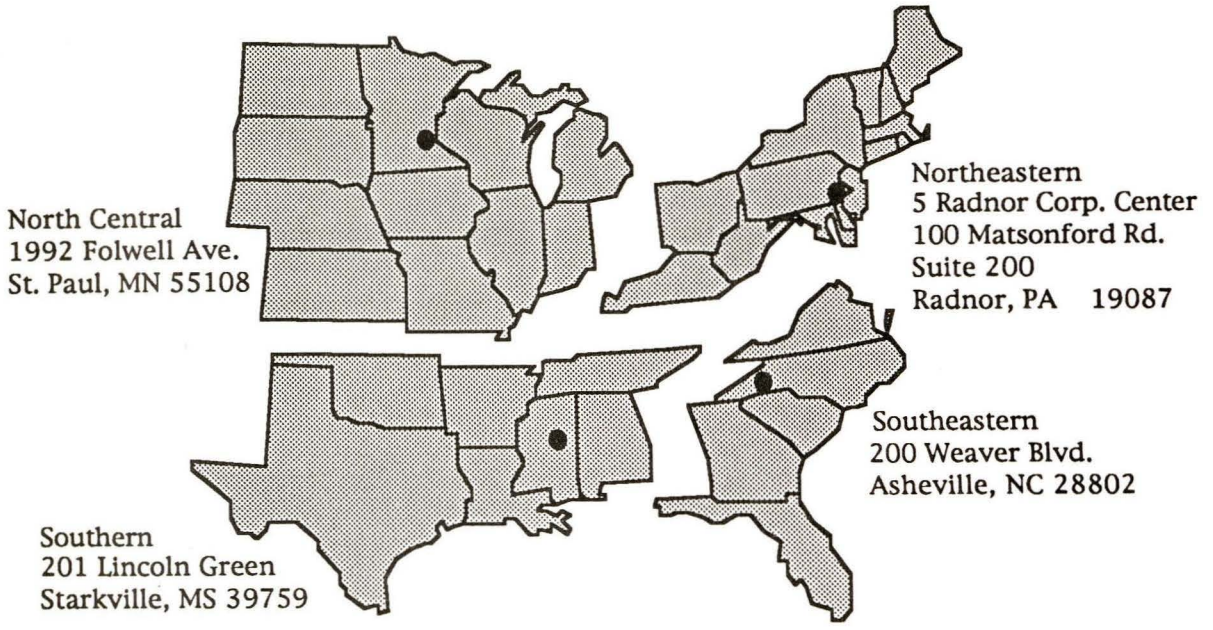


Figure 1.—*Eastern Forest Inventory and Analysis regions and project headquarters.*

For those interested in further analysis, the Forest Service can also provide parts of the data collected in each inventory. This report describes a standard format in which data can be obtained at a reasonable cost by anyone. This standard format, referred to as the Eastwide Data Base (EWDB) structure, was developed to provide users with as much data as possible in a manner consistent among States. EWDB files can be obtained for any post-1988 State inventory, soon after the inventory is finalized. Files for many State inventories conducted before 1988 are also available; however, some data fields may be empty or the items may not have been collected or computed as described in this report. These inconsistencies will be described in an addendum to this document for each State.

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CHAPTER 1—THE EASTWIDE DATA BASE

Periodic forest inventories are conducted for every State in the United States. In the East, these inventories are usually conducted every 5 to 15 years. Inventory findings are published in a series of statistical and analytical reports produced by USDA Forest Service regional experiment stations. However, many forest inventory data users require unpublished information that can be produced from the data collected in State inventories. Special information needs include:

1. Standard tables for geographic areas other than those published
2. Resource data that are consistent for all States
3. Projections of timber resources based on various assumptions and models
4. Information about specific conditions and species needed for detailed analyses.

In the past, special data requests have been handled differently by each of the four Eastern Forest Inventory and Analysis (FIA) projects, depending on the type of request and each project's data processing capabilities. It has been particularly difficult to analyze data from more than one FIA project because of inconsistencies in data collection and processing methods.

To make FIA data more compatible among States, a set of core tables was developed (Appendix 1). The core tables, now published in every Eastern FIA report, present basic timber resource information in a consistent format from one State to another. The introduction of the core tables made it easier to compare the forest resources of areas in different States and to assess the total resource of an area that crosses State and/or region boundaries.

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A more recent effort to provide consistent FIA data throughout the East, has been the creation of the Eastwide Data Base (EWDB) for FIA plot data. Each FIA project produces a set of data files for the most recent inventory of each State in its area of responsibility. All the files are written in the same format and contain all the data items needed to produce the core tables, plus other data items that all four projects collect. The EWDB contains all the data needed to run the Timber Resource Inventory Model (TRIM) (Tedder 1983). Items not available from all four projects are not part of the EWDB. The EWDB data files can be produced for a State as soon as that State's statistical report is completed. An outside user can then easily obtain a copy of this file at a reasonable cost (presently $500 per State) for their own analysis.

Chapter 2 of this publication describes the FIA sampling and estimation procedures. Chapter 3 presents the EWDB structure in detail. Chapter 4 explains how to use the files to compute basic estimates of area, volume, biomass, number of trees, growth, mortality, and removals. The last chapter tells how to obtain copies of the EWDB for a State.

CHAPTER 2.—FIA SAMPLING AND ESTIMATION PROCEDURES

Users of the Eastwide Data Base need a basic understanding of FIA sampling and estimation procedures to understand the type of data available. Here, we present a general discussion of these procedures. Specific sampling methods differ among regions and even among States within a region. Publications cited in this manual give more detailed information about methods used by each region. If you need more information about sampling procedures for a specific State, contact the FIA project responsible for that State's inventory.

Each State inventory begins with the interpretation of an aerial-photo sample that classifies the land by various photo classes. The total area of a sample comes from outside sources (usually Bureau of Census reports). The photo classes used are based on land use (pasture, cropland, urban, etc.). For forested land, more detailed classes are sometimes defined based on criteria such as forest type, volume per acre, stand size, stand density, ownership, and stand age. Then, ground plots are measured to adjust the aerial photo sample for changes since the date of photography and misclassification and to obtain estimates that cannot be made from the aerial photography. The photo classification of these ground plots, together with the area estimates from the photo sample, is used to assign area expansion factors to all ground plots. These area expansion factors are used to expand values observed on the plot from a per acre basis to a population basis. An area expansion factor is basically the area (in acres) that the plot represents for estimation purposes. The sampling area, or level at which expansion factors are assigned, is different from State to State, as is the scheme used to assign photo-interpretation classes. For the details of how these expansion factors were assigned to the ground plots for a particular State, contact the appropriate FIA project.

FIA plots are designed to cover a 1-acre sample area; however, not all trees on the acre are measured. Various arrangements of fixed radius and variable radius (prism) sample points are used to select sample trees to be measured. Ground plots may be new plots that have never been measured, or remeasurement plots that were measured in the previous inventory. For all plots, several observations are recorded for each sample tree, including its diameter breast height (d.b.h.), species, and other measurements that enable us to predict the tree's volume, growth rate, and quality. These tree measurements form the basis of the data on the tree records in the EWDB.

Some of the data items in the EWDB come directly from field measurements; others are computed from tree measurements. Net cubic foot volume is a computed item. Each FIA project uses some type of volume equation to compute this volume based on d.b.h. and other tree and stand attributes. Although equations differ from State to State, they were all designed to compute the same volume.

One important computed item is the tree expansion factor VOLFAC. This item expresses the number of trees per acre that each sampled tree represents in the current inventory. It is the inverse of the size of the plot the tree was sampled on. For example, if the plot design samples trees under 5 inches d.b.h. on a single one-one hundredth-acre fixed radius plot, this item would have the value 100 trees per acre for

a tree less than 5 inches d.b.h. If trees 5 inches d.b.h. and larger are sampled with ten 37.5 BAF (English) prism points, as is common with FIA plots, the expansion factor would depend on the d.b.h. of the tree. Under such a sample, a 14.0-inch tree would have an expansion factor of 3.51 trees per acre, again the inverse of the plot size[1].

Two other computed expansion factors are in the data base: MORTFAC and REMVFAC. They are used to compute mortality and removals. The mortality factor (MORTFAC) expresses an estimate of how many trees per acre of annual mortality are represented by a given sample tree. This factor is the number of trees per acre of annual mortality that the sample tree represents. In sample designs that have remeasurement plots, this value is zero for a tree that did not die over the remeasurement period. For trees that did die, MORTFAC is a function of the tree expansion factor and the remeasurement period. Some State inventories also estimate mortality from new ground plots. In these cases, mortality is estimated from either a mortality prediction equation that predicts the probability that a tree will die over some time period, or from a field estimate of mortality based on the measurement of dead trees and an estimate of when they died.

The removals factor (REMVFAC) is computed and used like MORTFAC. REMVFAC is the number of trees per acre of annual removals that the sample tree represents. It is computed based on observations of trees cut on either new or remeasured plots, depending on the inventory design. None of the Eastern FIA projects use removals prediction equations to estimate removals.

The items in the plot record are either observations of a specific condition at the plot center or estimates of average conditions on the acre sampled by the plot. Ownership is an example of a specific condition recorded at plot center, rather than averaged over the plot. If a plot area overlaps more than one owner, the ownership at plot center determines the recorded ownership class. Basal area is an example of an item averaged over the entire plot. If the plot falls in two stands with different basal areas, the value recorded in BACUR will represent their average basal area. In some State inventories, plots falling on more than one stand are shifted into one stand. EWDB users concerned about field procedures should check with the FIA project for more information.

We have tried to make the data in the EWDB as consistent as possible from one State to another. Therefore, although differences in field and estimation procedures do exist between States, the data in the EWDB for different States are compatible. The minor differences that do exist should have little or no impact on most uses of this data.

Accuracy Standards

Forest inventory plans are designed to meet sampling error standards for area, volume, growth, and removals provided in the Forest Service Handbook. These standards, along with other guidelines, are aimed at obtaining comprehensive and comparable information on timber resources for all parts of the country. In the East, FIA inventories are commonly designed to meet the specified sampling errors at the State level at the 67-percent confidence limit (one standard error). A 3-percent error per 1 million acres of timberland is the maximum allowable sampling error for area. A 5-percent error per 1 billion cubic feet of growing stock on timberland is the sampling error goal for volume, removals, and net annual growth.

Caution: FIA inventories are extensive inventories that provide reliable estimates for large sampling areas. As data are subdivided into smaller and smaller areas, such as a geographic unit or a county, the sampling errors increase and the reliability of the estimates decreases. For example, a State with 5 million acres of timberland would have a maximum allowable sampling error for area of 1.3 percent, a geographic unit within that State with 1 million acres of timberland would have a 3.0 percent maximum allowable sampling error, and a county within that State with 100 thousand acres would have a 9.5 percent maximum allowable sampling error at the 67-percent level.

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[1] *The plot size of a 14.0-inch tree on a single 37.5 BAF (English) prism plot would be:*

$(14.0^2 \times pi)/(37.5 \times 2^2 \times 12^2) = 0.0285$ *acres.*

The plot size of this tree on a 10-point cluster would be 10 times this or 0.285 acres, producing an expansion factor of 3.51.

CHAPTER 3.—DATA BASE STRUCTURE

The Eastwide Data Base has a simple hierarchical structure. This structure corresponds to FIA plot collection and data processing methods and contains data at three levels. The highest level is the county, followed by the plot level, and then the tree level.

Data are stored as one of three record types (10-county, 20-plot, 30-tree), each with its own format. A record contains information for one level of the hierarchy.

The EWDB consists of separate sequential files for each State. Each flat file is made up of all three record types. Files for a particular State are maintained by the FIA project responsible for the State's inventory (fig. 1). Copies can be obtained directly from the FIA projects (see Chapter 4).

The following is a detailed description of the format of the three record types in the EWDB. The description of each record type begins with a table (tables 1, 2, and 3) that gives the name of each element or data item in the record, the FORTRAN format that should be used to read the item, the columns it occupies, and the unit of measure of the item. The final column in each of these tables shows the key items that uniquely identify an occurrence of a data record. For record type 20, the plot record, this table also contains a section that explains what kinds of plots each data item comes from. For example, data items related to forest cover are not recorded for plots on nonforest land.

For each data item in a record, there is a section that includes all the information in tables 1, 2, and 3, plus a longer name for the data item and a detailed description that includes information on how the item was measured or estimated, and how the item can be used. For coded items, a listing of the possible codes and their meanings is also given.

Record Type 10

Table 1.—*Record type 10: county record*

Element name	FORTRAN read format	Columns occupied[1]	Units of measure	Key data items
1. RECTYPE	I2	1-2	Coded	
2. STATE	I2	3-4	Coded	X
3. UNIT	I1	5	Coded	
4. COUNTY	I3	6-8	Coded	X
5. CTYNAM	A28	13-40	Name	
6. STNAME	A2	41-42	Name	
7. CYCLE	I2	43-44	Number	
8. DATE	I4	45-48	Year	

[1] Columns 9-12 contain 0000 on all county records.

1. **RECTYPE**
(coded)
I2
Col. 1-2

Record type—Record type 10 contains information that identifies and describes the county. There is one record type 10 for each county in the State covered by an EWDB file.

2. **STATE**
(coded)
I2
Col. 3-4

State code—The two-digit Bureau of the Census, Federal Information Processing Standards (FIPS) code number of the State. For States in the EWDB, these codes are:

01	Alabama	24	Maryland	40	Oklahoma
05	Arkansas	25	Massachusetts	42	Pennsylvania
09	Connecticut	26	Michigan	44	Rhode Island
10	Delaware	27	Minnesota	45	South Carolina
12	Florida	28	Mississippi	46	South Dakota
13	Georgia	29	Missouri	47	Tennessee
17	Illinois	31	Nebraska	48	Texas
18	Indiana	33	New Hampshire	50	Vermont
19	Iowa	34	New Jersey	51	Virginia
20	Kansas	36	New York	54	West Virginia
21	Kentucky	37	North Carolina	55	Wisconsin
22	Louisiana	38	North Dakota	72	Puerto Rico
23	Maine	39	Ohio		

3. **UNIT**
(coded)
I1
Col. 5

Survey unit number—Forest Inventory and Analysis survey unit identification number. Survey units are groups of counties within each State. See Appendix 2 for codes.

4. **COUNTY**
(coded)
I3
Col. 6-8

County code—The three-digit FIPS code number for each county, parish, or other similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1980, are used.

5. **CTYNAM**
(name)
A28
Col. 13-40

County name—County name as recorded by the Bureau of the Census, 1980. County names are left justified. Only the first 28 characters of the county name are used.

6. **STNAME**
(name)
A2
Col. 41-42

State name—The two-character State abbreviation.

AL	Alabama	MD	Maryland	OK	Oklahoma
AR	Arkansas	MA	Massachusetts	PA	Pennsylvania
CT	Connecticut	MI	Michigan	RI	Rhode Island
DE	Delaware	MN	Minnesota	SC	South Carolina
FL	Florida	MS	Mississippi	SD	South Dakota
GA	Georgia	MO	Missouri	TN	Tennessee
IL	Illinois	NE	Nebraska	TX	Texas
IN	Indiana	NH	New Hampshire	VT	Vermont
IA	Iowa	NJ	New Jersey	VA	Virginia
KS	Kansas	NY	New York	WV	West Virginia
KY	Kentucky	NC	North Carolina	WI	Wisconsin
LA	Louisiana	ND	North Dakota	PR	Puerto Rico
ME	Maine	OH	Ohio		

7. **CYCLE** (number) I2 Col. 43-44 — **Inventory cycle number**—Identifies the current cycle number for the data in a data base. For example, a 4 would indicate the data came from the fourth inventory of that State.

8. **DATE** (year) I4 Col. 45-48 — **Date of inventory**—The calendar year that the current inventory data represent—for example, 1984. FIA data are often collected over more than 1 year; however, a specific year is selected that indicates most data were collected. FIA publications based on an inventory are said to be an analysis of the forest resource as of this date.

Record Type 20

Table 2.—*Record type 20: Plot record*

Element name	FORTRAN read format	Columns occupied	Units of measure	Coded on[1]	Key data items
1. RECTYPE	I2	1-2	Coded	A	
2. STATE	I2	3-4	Coded	A	X
3. UNIT	I1	5	Coded	A	
4. COUNTY	I3	6-8	Coded	A	X
5. PLTNUM	I4	9-12	Coded	A	X
6. OWNER	I2	13-14	Coded	F	
7. TYPCUR	I2	15-16	Coded	F	
8. TYPOLD	I2	17-18	Coded	F	
9. STDAGE	I3	19-21	Years	T	
10. STDSIZE	I1	22	Coded	F	
11. STORCUR	I1	23	Coded	T	
12. STOROLD	I1	24	Coded	T	
13. SITECL	I1	25	Coded	T	
14. SI	I2	26-27	Feet	T	
15. SIAGE	I2	28-29	Years	T	
16. ADFOR	I3	30-32	Coded	A	
17. GLUCUR	I2	33-34	Coded	A	
18. GLUOLD	I2	35-36	Coded	A	
19. BA	I3	37-39	Sq.ft.	T	
20. SLOPE	I2	40-41	Percent	T	
21. ASPECT	I3	42-44	Degrees	T	
22. PHYSIO	I1	45	Coded	T	
23. TREATOP	I2	46-47	Coded	T	
24. INHIBPC	I2	48-49	Percent	T	
25. NONSTPC	I2	50-51	Percent	T	
26. GRSTKPC	I3	52-54	Percent	T	
27. ALSTKPC	I3	55-57	Percent	T	
28. REMPER	F3.1	58-60	Years	A	
29. EXPACR	I5	61-65	Acres	A	
30. EXPVOL	I5	66-70	Acres	A	
31. EXPGRO	I5	71-75	Acres	A	
32. EXPMOR	I5	76-80	Acres	A	
33. EXPREM	I5	81-85	Acres	A	
34. LONG	F7.1	86-92	Seconds	A	
35. LAT	F7.1	93-99	Seconds	A	
36. MDATE	I4	100-103	Year-month	A	

[1] A = Recorded on all plots; F = Recorded on all forested plots (GLUCUR or GLUOLD = 20, 25, 40, or 45); T = Recorded on all timberland plots (GLUCUR or GLUOLD = 20). An item will be zero for plots where the element has not been recorded.

1. **RECTYPE**
(coded)
I2
Col. 1-2

Record type—Record type 20 contains information that identifies and describes the plot. There is one record type 20 for each plot in an EWDB file.

2. **STATE**
(coded)
I2
Col. 3-4

State code—The two-digit Bureau of the Census, Federal Information Processing Standards (FIPS) code number of the State. For States in the EWDB, these code are:

01	Alabama	24	Maryland	40	Oklahoma
05	Arkansas	25	Massachusetts	42	Pennsylvania
09	Connecticut	26	Michigan	44	Rhode Island
10	Delaware	27	Minnesota	45	South Carolina
12	Florida	28	Mississippi	46	South Dakota
13	Georgia	29	Missouri	47	Tennessee
17	Illinois	31	Nebraska	48	Texas
18	Indiana	33	New Hampshire	50	Vermont
19	Iowa	34	New Jersey	51	Virginia
20	Kansas	36	New York	54	West Virginia
21	Kentucky	37	North Carolina	55	Wisconsin
22	Louisiana	38	North Dakota	72	Puerto Rico
23	Maine	39	Ohio		

3. **UNIT**
(coded)
I1
Col. 5

Survey unit number—Forest Inventory and Analysis survey unit identification number. Survey units are groups of counties within each State. See Appendix 2 for codes.

4. **COUNTY**
(coded)
I3
Col. 6-8

County code—The three-digit FIPS code number for each county, parish, or other similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1980, are used.

5. **PLTNUM**
(coded)
I4
Col. 9-12

Plot number—A four-digit plot number. Plot numbers are unique within counties, but may be repeated within a State or survey unit.

6. **OWNER**
(coded)
I2
Col. 13-14

Ownership code—Legal owner of the plot land at the time of the current inventory. In addition, this code indicates if private lands have been leased to forest industry.

Code	*Owner*	*Definition*
11	National Forest	Lands owned or administered by USDA Forest Service, National Forest System.
12	Bureau of Land Management (BLM)	Lands owned or administered by USDI Bureau of Land Management
13	Indian Lands	Tribal lands held in fee by the Federal Government but administered for Indian tribal groups, and Indian trust allotments. (Indian lands not administered by the BIA are placed in the appropriate private owner class.)

14	Other Federal	Lands owned or administered by Federal agencies other than the Forest Service or the BLM. These include military reservations, National Parks, National Fish and Wildlife Service lands, and Corps of Engineers lands.
15	State	Lands owned by State governments, or lands leased by State governmental units for more than 50 years.
16	County and Municipal	Lands owned by county or municipal agencies, or lands leased by these agencies for more than 50 years.
20	Forest Industry	Lands owned by companies or individuals operating wood-using plants.
40	Farmer	Lands owned by an individual who operates a farm (farm operator), either participating in the work or directly supervising the work. A farm is defined as land on which agricultural operations are being conducted and sale of agricultural products totals $1,000 or more during the year.
50	Farmer Owned-Leased	Lands owned by a farm operator but leased to forest industry.
60	Other Private-Corporate	Lands owned by private corporations other than forest industry or farmers.
70	Other Private-Individual	Lands owned by individuals other than farmers.
80	Other Private-Corporate—Leased	Lands owned by corporations but leased to forest industry
90	Other Private-Individual—Leased	Lands owned by other private individuals but leased to forest industry.

If lease status is unknown, the owner codes for unleased (40, 60, 70) are recorded. If corporate status is unknown, the owner codes for individual are recorded (70, 90).

7. **TYPCUR**
(coded)
I2
Col. 15-16

Current forest type—The predominant forest type of the area where the plot is located. This type is based on the tree species that form a plurality of all live stocking within the stand. In this two-digit coded element, the first digit represents a general type group and the second digit specifies an Eastwide standard type, as shown below. These types come from the standard set of local forest types in the Forest Service Hand book, with several types added. Not every type is recognized in every State, and type names used in published reports may differ from State to State. For example, the 1986 Indiana report shows area in a type called lowland oak. In the data base, the plots that represent this area are coded 61—swamp chestnut oak-cherrybark oak. The assignment of a forest type to a stand depends on the determination of stocking. Each FIA project has somewhat different methods of assigning stocking. Information on how data are assigned to these types for a particular State can be obtained directly from the FIA project responsible for the inventory and from the following publications or people:

North Central:
Hansen and Hahn, 1992

Northeastern:
Contact Thomas Frieswyk, Northeastern Forest Experiment Station
Southeastern:
Contact Joseph F. Glover, Southeastern Forest Experiment Station
Southern:
May 1991

Type group	***Forest type***	***Type group or forest type name***
00		White - Red - Jack Pine
	01	Jack pine
	02	Red pine
	03	White pine
	04	White pine - hemlock
	05	Hemlock
	06	Scotch pine
	07	Ponderosa pine
10		Spruce - Fir
	11	Balsam fir
	12	Black spruce
	13	Red spruce - balsam fir
	14	Northern white-cedar
	15	Tamarack
	16	White spruce
	17	Norway spruce
	18	Larch
	19	Red spruce
20		Longleaf - Slash Pine
	21	Longleaf pine
	22	Slash pine
30		Loblolly - Shortleaf Pine
	31	Loblolly pine
	32	Shortleaf pine
	33	Virginia pine
	34	Sand pine
	35	Eastern redcedar
	36	Pond pine
	37	Spruce pine
	38	Pitch pine
	39	Table-mountain pine
40		Oak - Pine
	41	White pine - northern red oak - wash
	42	Eastern redcedar - hardwood
	43	Longleaf pine - scrub oak
	44	Shortleaf pine - oak
	45	Virginia pine - southern red oak
	46	Loblolly pine - hardwood
	47	Slash pine - hardwood
	49	Other oak - pine
50		Oak - Hickory
	51	Post oak - black oak - bear oak
	52	Chestnut oak
	53	White oak - red oak - hickory
	54	White oak

	55	Northern red oak
	56	Yellow-poplar - white oak - northern red oak
	57	Southern scrub oak
	58	Sweetgum - yellow-poplar
	59	Mixed central hardwoods
60		Oak - Gum - Cypress
	61	Swamp chestnut oak - cherrybark oak
	62	Sweetgum - Nuttall oak - willow oak
	63	Sugarberry - American elm - green ash
	65	Overcup oak - water hickory
	66	Atlantic white cedar
	67	Baldcypress - water tupelo
	68	Sweetbay - swamp tupelo - red maple
	69	Palm-mangrove - other tropical
70		Elm - Ash - Cottonwood
	71	Black ash - American elm - red maple
	72	River birch - sycamore
	73	Cottonwood
	74	Willow
	75	Sycamore - pecan - American elm
	76	Red maple - lowland
	79	Mixed lowland hardwoods
80		Maple - Beech - Birch
	81	Sugar maple - beech - yellow birch
	82	Black cherry
	83	Black walnut
	84	Red maple - northern hardwood
	87	Red maple - upland
	88	Northern hardwood - reverting field
	89	Mixed northern hardwoods
90		Aspen - Birch
	91	Aspen
	92	Paper birch
	93	Gray birch
	94	Balsam poplar
99	99	Nonstocked

8. **TYPOLD**
(coded)
I2
Col. 17-18

Old forest type—Forest type at the previous survey. Criteria for assigning types and codes are the same as for TYPCUR. TYPOLD is zero for new or temporary plots.

9. **STDAGE**
(years)
I3
Col. 19-21

Stand age—The age (in years) of the stand the plot is in. If actual age is unavailable or the stand has a mix of ages, 999 is entered. Any inventory dated 1983 or later will contain stand ages recorded to the nearest year. For some older inventories, stand age was recorded in 10- or 20-year age classes and the value recorded is the center of the age class.

10. **STDSIZE**
(Coded)
I1
Col. 22

Stand size class—A classification of forest land based on the predominant stocking by the size of all live trees present on the plot. The d.b.h. range for poletimber trees is from 5.0 to 8.9 inches for softwoods and from 5.0 to 10.9 inches for hardwoods. Sawtimber trees are 9 inches d.b.h.

or larger for softwoods and 11 inches d.b.h. or larger for hardwoods. Seedling and sapling trees are smaller than 5 inches d.b.h. Stand size class is determined by the percent stocking represented by various size trees. More detailed information on how stand size class is determined from plot data in a particular State can be obtained directly from the FIA project responsible for the inventory and from the following publications or people:

North Central:
Hansen and Hahn 1992
Northeastern:
Contact Thomas Frieswyk, Northeastern Forest Experiment Station
Southeastern:
Contact Joseph F. Glover, Southeastern Forest Experiment Station
Southern:
May 1991

Code	***Stand size class***	***Definition***
1	Sawtimber	Stands with an all live stocking value of at least 16.7 on which more than 50 percent of the stocking is in trees 5 inches d.b.h. or larger, and the stocking of sawtimber size trees is equal to or greater than the stocking of poletimber size trees.
2	Poletimber	Stands with an all live stocking value of at least 16.7 on which more than 50 percent of the stocking is in trees 5 inches d.b.h. or larger, and the stocking of sawtimber size trees is less than the stocking of poletimber size trees.
3	Seedling-sapling	Stands with an all live stocking value of at least 16.7 on which at least 50 percent of the stocking is in trees less than 5 inches d.b.h.
4	Non-stocked	Stands with an all live stocking value of less than 16.7.

11. **STORCUR**
(coded)
I1
Col. 23

Current stand origin—The origin of the stand in which the plot is located (planted or natural). In a planted stand, most of the trees that define the stand size class and forest type must have originated from planting or direct artificial seeding.

Code	***Current stand origin***
1	Natural stands
2	Planted stands

12. **STOROLD**
(coded)
I1
Col. 24

Old stand origin—Same as STORCUR at the time of the last inventory. STOROLD is zero for new or temporary plots.

Code	*Current stand origin*
1	Natural stands
2	Planted stands

13. **SITECL**
(coded)
I1
Col. 25

Site productivity class—A classification of timber land in terms of inherent capacity to grow crops of industrial wood. The class identifies the average potential growth in cubic feet/acre/year (trees 5 inches d.b.h. or larger to a 4-inch top) and is based on the culmination of mean annual increment of fully stocked natural stands.

Code	*Site productivity class*
1	225+ cubic feet/acre/year
2	165-224 cubic feet/acre/year
3	120-164 cubic feet/acre/year
4	85-119 cubic feet/acre/year
5	50-84 cubic feet/acre/year
6	20-49 cubic feet/acre/year

14. **SI**
(feet)
I2
Col. 26-27

Site index—Site index (in feet) of the stand in which the plot is located. A site index of 100 or more is recorded as 99.

15. **SIAGE**
(years)
I2
Col. 28-29

Site index base age—The base age of the site index curves used to get Site index.

16. **ADFOR**
(coded)
I3
Col. 30-32

Administrative forest—A three-digit code for the National Forest that the plot is located on. Present for National Forest plots only (owner=11), zero for all other owners.

Region	*Code*	*National Forest name*
1	108	Custer
2	203	Black Hills
2	207	Nebraska
8	801	NFS in Alabama
8	802	Daniel Boone
8	803	Chattahoochee-Oconee
8	804	Cherokee
8	805	NFS in Florida
8	806	Kisatchie
8	807	NFS in Mississippi
8	808	George Washington
8	809	Ouachita

8	810	Ozark and St. Francis
8	811	NFS in North Carolina
8	812	Francis Marion-Sumter
8	813	NFS in Texas
8	814	Jefferson
8	816	Caribbean
9	902	Chequamegon
9	903	Chippewa
9	904	Huron-Manistee
9	905	Mark Twain
9	906	Nicolet
9	907	Ottawa
9	909	Superior
9	910	Hiawatha
9	911	Wayne-Hoosier
9	919	Allegheny
9	920	Green Mountain
9	921	Monongahela
9	922	White Mountain

17. **GLUCUR**
(coded)
I2
Col. 33-34

Current land use class—A classification that indicates the basic biological potential of the land and its current use and legal status. Initially, land is broken into two broad classes (forest and nonforest). These broad classes are separated into the more specific classes that are actually coded.

Code	*Current land use class*
20	Timberland
25	Reserved Timberland
40	Other Forest Land
45	Reserved Other Forest Land
60	Nonforest Land
91	Census Water

Land class	*Definition*
Forest Land	Land currently growing forest trees of any size with a total stocking value of at least 16.7 (see element 27: ALSTKP for the definition of stocking), or lands formerly forested, currently capable of becoming forest land, and not currently developed for nonforest uses. These lands must be a minimum of 1 acre in area. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads, trails, streams, and clearings within forest areas are classified as forest land if they are less than 120 feet wide. Recently clearcut areas that are currently nonstocked are classed as forest land unless they are being used for a nonforest use such as agriculture. Forest land is divided into two categories (timberland and other forest land), and both of these categories may be further classified as reserved if harvesting of trees is prohibited by statutory or administrative restrictions.

Timberland	Forest land that is producing or capable of producing crops of industrial wood. This land should be capable of producing 20 cubic feet of industrial wood per acre per year. This includes all land formerly called commercial forest land.
Other Forest Land	Forest land not capable of producing crops of industrial wood. This may be the result of adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, and rockiness. Trees on these sites are usually of poor form, small size, or inferior quality and consequently are not used for industrial products. These sites often contain tree species that are not currently used for industrial wood production. (These lands were called unproductive forest in previous reports.)
Reserved Forest Land	Forest lands that have statutory or administrative restrictions prohibiting the harvest of trees. Examples include land within the National Wilderness Preservation System, Research Natural Areas, National Parks and Monuments, and State Parks. In National Forests, reserved forest lands are referred to collectively as withdrawn forest land. This classification of reserved can be given to either timberland or other forest land.
Nonforest Land	Land that has never supported forests or land formerly forested but now developed for uses such as agriculture, residence, commerce, industry, city parks, or improved roads. If located within forest areas, unimproved roads and nonforested strips must be more than 120 feet wide, and clearings and other openings in a forest area must be more than 1 acre to qualify as nonforest land. Nonforest land also includes streams, sloughs, estuaries, and canals more than 120 feet wide but less than one-eighth of a mile (660 feet) wide, or lakes, reservoirs, and ponds 1 to 40 acres in size.
Census Water	Streams, sloughs, estuaries, and canals more than one-eighth of a statute mile (660 feet) wide, and lakes, reservoirs, and ponds more than 40 acres in size.

18. **GLUOLD**
(coded)
I2
Col. 35-36

Old land use class—Same as GLUCUR at the time of the last inventory. GLUOLD is zero for new or temporary plots.

Code	*Old land use class*
20	Timberland
25	Reserved Timberland
40	Other Forest Land
45	Reserved Other Forest Land
60	Nonforest Land
91	Census Water

19. **BA** (sq. ft.) I3 Col. 37-39

Basal area—The summed-cross sectional area at breast height of all live trees 1.0 inches d.b.h. or larger on the plot. This item is usually measured by variable radius plot (prism) sampling and recorded in square feet per acre.

20. **SLOPE** (percent) I2 Col. 40-41

Slope—The average percentage of the deviation from the horizontal over the sample acre. Valid values are 0 through 99.

21. **ASPECT** (degrees) I3 Col. 42-44

Aspect—The direction of drainage for most of the plot, recorded as the azimuth of this direction. Valid values are 0 through 360. 0 is only valid when slope is also 0.

22. **PHYSIO** (coded) I1 Col. 45

Physiographic class—A measure of soil and water conditions that affect tree growth on the plot.

Code	*Physiographic class*	*Definition*
3	Xeric	Very dry soils where excessive drainage seriously limits both growth and species occurrence.
4	Xeromesic	Moderately dry soils where excessive drainage limits growth and species occurrence to some extent.
5	Mesic	Deep, well-drained soils. Growth and species occurrence limited only by climate.
6	Hydromesic	Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent.
7	Hydric	Very wet sites where excess water seriously limits both growth and species occurrence.

23. **TREATOP** (coded) I2 Col. 46-47

Treatment opportunity class—Identifies the physical opportunity to improve stand conditions by applying management practices. The 11 classes are defined as follows:

Code	*Treatment opportunity class*	*Definition*
1	Regeneration without site preparation	The area is characterized by the absence of a manageable stand because of inadequate stocking of growing stock. Growth will be much below the potential for the site if the area is left alone. Prospects are not good for natural regeneration. Artificial regeneration will require little or no site preparation.

2	Regeneration with site preparation	The area is characterized by the absence of a manageable stand because of inadequate stocking of growing stock. Growth will be much below the potential for the site if the area is left alone. Either natural or artificial regeneration will require site preparation.
3	Stand conversion	The area is characterized by stands of undesirable, chronically diseased, or off-site species. Growth and quality will be much below the potential for the site if the area is left alone. The best prospect is for conversion to a different forest type or species.
4	Thinning seedlings and saplings	The stand is characterized by a dense stocking of growing stock. Stagnation appears likely if left alone. Stocking must be reduced to help crop trees attain dominance.
5	Thinning poletimber	The stand is characterized by a dense stocking of growing stock. Stocking must be reduced to prevent stagnation or to confine growth to selected, high quality crop trees.
6	Other stocking control	The stand is characterized by an adequate stocking of seedlings, saplings, and/or poletimber growing stock, mixed with competing vegetation either overtopping or otherwise inhibiting the development of crop trees. The undesirable material must be removed to release overtopped trees; to prevent stagnation; or to improve composition, form, or growth of the residual stand.
7	Other intermediate treatments	The stand would benefit from other special treatments such such as fertilization to improve the growth potential of the site, and pruning to improve the quality of individual crop trees.
8	Clearcut harvest	The area is characterized by a mature or overmature sawtimber stand of sufficient volume to justify a commercial harvest. The best prospect is to harvest the stand and regenerate.
9	Partial cut harvest	The stand is characterized by poletimber or sawtimber size trees with sufficient merchantable volume for a commercial harvest, which will meet intermediate stand treatment needs or prepare the stand for natural regeneration. The stand is of a favored species composition and may be even or uneven aged. Included are such treatments as commercial thinning, seed tree or shelterwood regeneration, and use of the selection system to maintain an uneven age stand.
10	Salvage harvest	The stand is characterized by excessive damage to merchantable timber because of fire, insects, disease, wind, ice, or other destructive agents. The best prospect is to remove damaged or threatened material.
11	No treatment	Stand is characterized by an adequate stock of growing-stock trees in reasonably good condition.

24. **INHIBPC**
(percent)
I2
Col. 48-49

Percent inhibiting vegetation—Percent of the area covered by inhibiting vegetation. A value of 99 is recorded for areas that are entirely (100 percent) covered with inhibiting vegetation. This item is not available for States inventoried by the Northeastern Forest Experiment Station.

25. **NONSTPC**
(percent)
I2
Col. 50-51

Percent nonstocked—Percent of the area in which the plot is located that is nonstocked with all live trees (0-100 percent basis). A value of 99 is recorded for plots that have no live stocking (100 percent nonstocked). This item is not available for States inventoried by the Northeastern Forest Experiment Station.

26. **GRSTKPC**
(value)
I3
Col. 52-54

Growing stock stocking—Stocking of the plot by growing-stock trees. Data are in the form of an absolute stocking value (0-167). More detailed information on how stocking values are determined from plot data in a particular State can be obtained directly from the FIA project responsible for the inventory and from the following publications or people:

North Central:
Hansen and Hahn 1992
Northeastern:
Contact Thomas Frieswyk, Northeastern Forest Experiment Station
Southeastern:
Contact Joseph F. Glover, Southeastern Forest Experiment Station
Southern:
May 1991

27. **ALSTKPC**
(value)
I3
Col. 55-57

All live stocking—Stocking of the plot by live trees of any species. Data are in the form of absolute stocking value (0-167). See element 26, GRSTKPC, for a list of publications that describe how stocking values are determined from plot data. The following classification of plots based on the stocking value (all live and/or growing stock) is common in FIA reports.

Overstocked	Stands in which stocking of all live trees is 130.0 or more.
Fully stocked	Stands in which stocking of all live trees is from 100.0 to 129.9.
Medium stocked	Stands in which stocking of all live trees is from 60.0 to 99.9.
Poorly stocked	Stands in which stocking of all live trees is from 16.7 to 59.9.
Nonstocked	Stands in which stocking of all live trees is less than 16.7.

28. **REMPER**
(years)
F3.1
Col. 58-60

Remeasurement period—The number of years between measurements of remeasured plots. This item is zero for new or temporary plots. Remeasurement period is based on the number of growing seasons between measurements. Allocation of parts of the growing season by month is different for each FIA project. Contact the individual FIA project for information on how this is done for a particular State.

29. **EXPACR**
(acres)
I5
Col. 61-65

Area expansion factor—The number of acres the plot represents for estimating area variables such as ownership and land cover class. The sum of EXPACR over all record 20's in a file is the total land and water area of the State.

30. **EXPVOL**
(acres)
I5
Col. 66-70

Volume expansion factor—The number of acres that the plot represents for estimating current volume and number of trees. Volume will be "expanded" over the appropriate acreage by multiplying EXPVOL x each volume/acre element on the tree record (record type 30). Total volume in a State is calculated by summing the expanded volume estimates from all trees on all plots in an EWDB file. Number of trees is expanded in a similar way.

31. **EXPGRO**
(acres)
I5
Col. 71-75

Growth expansion factor—The number of acres that the plot represents for estimating growth. Growth will be "expanded" over the appropriate acreage by multiplying EXPGRO x each growth/acre element on the tree record (record type 30). Total growth in a State is calculated by summing these expanded estimates from all trees on all plots in an EWDB file. Some plots will not have a value in this field. In some State inventories, growth is only estimated on remeasured plots. In such cases, this item would be zero for new or temporary plots.

32. **EXPMOR**
(acres)
I5
Col. 76-80

Mortality expansion factor—The number of acres that the plot represents for estimating mortality. Mortality will be "expanded" over the appropriate acreage by multiplying EXPMOR x each mortality/acre element on the tree record (record type 30). Total mortality in a State is calculated by summing these expanded estimates from all trees on all plots in an EWDB file. Some plots will not have a value in this field. In some State inventories, mortality is only estimated on remeasured plots. In such cases, this item would be zero for new or temporary plots.

33. **EXPREM**
(acres)
I5
Col. 81-85

Removals expansion factor—The number of acres that the plot represents for estimating removals. Removals will be "expanded" over the appropriate acreage by multiplying EXPREM x each removals/acre element on the tree record (record type 30). Total removals in a State is calculated by summing these expanded estimates from all trees on all plots in an EWDB file. Some plots will not have a non-zero value in this field. In some State inventories, removals are only estimated on remeasured plots. In such cases, this item would be zero for new or temporary plots.

34. **LONG**
(seconds)
F7.1
Col. 86-92

Longitude—The longitude of the plot recorded to the nearest 100 seconds.

35. **LAT**
(seconds)
F7.1
Col. 93-99

Latitude—The latitude of the plot recorded to the nearest 100 seconds.

36. **MDATE**
(date)
I4
Col. 100-103

Measurement date—The date the plot was actually measured. This date is coded YYMM where YY is the last 2 digits of the year (88 for 1988) and MM is the month (02 for February). This date may differ from DATE on the county record.

Record type 30

Table 3.—*Record type 30, tree record*

	Element name	FORTRAN read format	Columns occupied	Units of measure	Key data items
1.	RECTYPE	I2	1-2	Coded	
2.	STATE	I2	3-4	Coded	X
3.	UNIT	I1	5	Coded	
4.	COUNTY	I3	6-8	Coded	X
5.	PLTNUM	I4	9-12	Coded	X
6.	POINT	I2	13-14	Coded	X
7.	TREE	I2	15-16	Number	X
8.	STATUS	I1	17	Number	X
9.	SPP	I3	18-20	Coded	
10.	SPPGRP	I2	21-22	Coded	
11.	DBHCUR	F3.1	23-25	Inches	
12.	DBHOLD	F3.1	26-28	Inches	
13.	TGRADE	I1	29	Coded	
14.	TCLASS	I1	30	Coded	
15.	CRATIO	I1	31	Coded	
16.	CRCLS	I1	32	Coded	
17.	DAMAGE	I2	33-34	Coded	
18.	VOLFAC	F8.4	35-42	Trees/acre	
19.	MORTFAC	F8.4	43-50	Trees/acre/year	
20.	REMVFAC	F8.4	51-58	Trees/acre/year	
21.	NETCFVL	F8.4	59-66	Cubic feet	
22.	NETCFSL	F8.4	67-74	Cubic feet	
23.	NETBFVL	F8.4	75-82	Board feet	
24.	NETCFGR	F8.4	83-90	Cu.ft./year	
25.	NETBFGR	F8.4	91-98	Bd.ft./year	
26.	TOTBIO	I6	99-104	Green lbs.	
27.	MERBIO	I6	105-110	Green lbs.	

1. **RECTYPE**
(coded)
I2
Col. 1-2

Record type—Record type 30 contains information that identifies and describes each tree on a plot. Tree records will only occur on plots where either GLUCUR or GLUOLD on the plot record is 20 (Timberland).

2. **STATE**
(coded)
I2
Col. 3-4

State code—The two-digit Bureau of the Census, Federal Information Processing Standards (FIPS) code number of the State. For States in the EWDB, these codes are:

01	Alabama	24	Maryland	40	Oklahoma
05	Arkansas	25	Massachusetts	42	Pennsylvania
09	Connecticut	26	Michigan	44	Rhode Island
10	Delaware	27	Minnesota	45	South Carolina
12	Florida	28	Mississippi	46	South Dakota
13	Georgia	29	Missouri	47	Tennessee
17	Illinois	31	Nebraska	48	Texas
18	Indiana	33	New Hampshire	50	Vermont
19	Iowa	34	New Jersey	51	Virginia
20	Kansas	36	New York	54	West Virginia
21	Kentucky	37	North Carolina	55	Wisconsin
22	Louisiana	38	North Dakota	72	Puerto Rico
23	Maine	39	Ohio		

3. **UNIT**
(coded)
I1
Col. 5

Survey unit number—Forest Inventory and Analysis survey unit identification number. Survey units are groups of counties within each State. See Appendix 2 for codes.

4. **COUNTY**
(coded)
I3
Col. 6-8

County code—The three-digit FIPS code number for each county, parish or other similar governmental unit in a State. FIPS codes from the Bureau of the Census, 1980, are used.

5. **PLTNUM**
(coded)
I4
Col. 9-12

Plot number—A four-digit plot number. Plot numbers are unique within counties, but may be repeated within a State or survey unit.

6. **POINT**
(number)
I2
Col. 13-14

Point number—A two-digit point number used to identify the point (of the sample cluster) the tree was measured on.

7. **TREE**
(number)
I2
Col. 15-16

Tree number—A two-digit number used in combination with status to uniquely identify a tree on a point.

8. **STATUS**
(coded)
I1
Col. 17

Tree status—A one-digit code that identifies whether the sample tree is live, cut, or dead.

Code	*Tree status*
1	Live
2	Dead (not salvageable)
3	Cut
4	Salvageable dead
5	Snag (special code for wildlife den trees used only by the Northeastern FIA project)

9. **SPP**
(coded)
I3
Col. 18-20

Species code—A three-digit standard tree species code. Codes for trees in the EWDB are listed in Appendix 3.

10. **SPPGRP**
(coded)
I2
Col. 21-22

Species group—A two-digit Eastwide species group number. This number is used to produce many of the core tables. The assignment of individual species (SPP) to these groups is shown in Appendix 3. Individual FIA projects may further break these species groups down for published tables, but this is a common list that all published core tables must match. For example, the North Central FIA project routinely separates the eastern white and red pine group into two groups for publication in Minnesota, Wisconsin, and Michigan. But FIA projects cannot combine species groups in the core tables. For example, SPPGRP 26 and 27 cannot be combined in tables and reported as "other hardwoods."

Code	*Species group name*
1	Longleaf and slash pine
2	Loblolly and shortleaf pine
3	Other yellow pines
4	Eastern white and red pine
5	Jack pine
6	Spruce and balsam fir
7	Eastern hemlock
8	Cypress
9	Other softwoods
10	Select white oaks
11	Select red oaks
12	Other white oaks
13	Other red oaks
14	Hickory
15	Yellow birch
16	Hard maple
17	Soft maple
18	Beech
19	Sweetgum
20	Tupelo and black gum
21	Ash
22	Cottonwood and aspen
23	Basswood
24	Yellow-poplar
25	Black walnut
26	Other soft hardwoods
27	Other hard hardwoods
28	Noncommercial

11. **DBHCUR**
(inches)
F3.1
Col. 23-25

Current diameter—The current diameter of the sample tree at breast height (in inches, to last one-tenth inch). For dead, salvageable dead, or snag trees (STATUS = 2, 4, or 5), this is the diameter of the tree at the time it died. In most cases the tree is still standing and the diameter is measured. If the bark has fallen off the tree, an estimated bark thickness is used to obtain this diameter so that it is an estimator of the diameter at the time the tree died. The Southeastern FIA project uses the diameter measured at the previous inventory and an update procedure to obtain the diameter at the time of death and other projects use a similar procedure for trees that can not be measured. For

cut trees (STATUS = 3), the value in this item is somewhat different depending on the FIA project that produced the file. The Southern and Southeastern FIA projects estimate the d.b.h. of a cut tree at the time it was cut, and the Northeastern and North Central projects record this diameter as the diameter at the last measurement. The Southern project records this diameter as the diameter at the last measurement for trees on plots that change land use from timberland to other land uses.

12. **DBHOLD**
(inches)
F3.1
Col. 26-28

Old diameter—The diameter of the sample tree at breast height recorded at the previous measurement (in inches, to the last one-tenth inch).

13. **TGRADE**
(coded)
I1
Col. 29

Tree grade—This item is nonzero for all sawtimber size trees regardless of status. Tree grade is not measured on all sawtimber size trees on every plot. Sawtimber size trees that are graded but do not contain a gradeable log are given a tree grade 5. Sawtimber size trees that are not graded because of the sampling design have a tree grade of 9. Trees smaller than sawtimber receive a tree grade of zero. Procedures used to grade trees are different for each Eastern FIA project.

Code	*Tree grade*
1	Tree grade 1
2	Tree grade 2
3	Tree grade 3
4	Graded and contains a gradeable log but does not meet grade 3 standards
5	Graded but does not contain a gradeable log (local use trees)
9	Not graded

The following is a short discussion of each project's grading procedures. For more information, check with the individual FIA project.

North Central:

For hardwoods, the tree grade is based on Hanks, 1976. For softwoods, tree grade is the log grade of the first saw log in the tree. If a sawtimber-size tree does not have one 12-foot or two 8-foot saw logs that meet minimum log grade requirements, it is a cull tree (tree grade 5) and is also given a TCLASS other than 2. A growing-stock hardwood tree may also have a tree grade 5 if it does not have a gradeable 12-foot log in the first 16 feet, but does have at least one 12-foot or two 8-foot saw logs in the entire tree. Tree grade is only recorded on a subset of the sample plots in many States in the North Central region. On plots where tree grade is not observed, all sawtimber-size trees are given a tree grade 9.

Northeastern:

For hardwoods and cypress, the tree grade is based on Hanks 1976. For yellow pines, the tree grade is based on Schroeder *et al.* 1968. For other softwoods, tree grade is based on Brisbin and Sonderman 1971.

Southeastern:

For hardwoods and cypress, the tree grade is based on Hanks 1976. For yellow pines, the tree grade is based on Schroeder *et al.* 1968. For other softwoods, tree grade is based on Brisbin and Sonderman 1971.

Southern:

Tree grades 1-3 for hardwoods and cypress are based on standards defined in Hanks 1976. Grade 4 is used for trees that do not qualify for

grade 3, but that do contain a butt log that qualifies them for a tie and timber grade. Softwoods are assigned grades as described in USDA, Forest Service Handbook, 1972, Forest Survey Handbook (4809.11), Sections 46.8 and 75.1.

14. **TCLASS**
(coded)
I1
Col. 30

Tree class—A one-digit code for the general quality of the tree. For cut, dead, and salvageable dead trees, TCLASS reflects conditions at the time the tree died or was cut. The following classes are represented:

Code	*Tree class*	*Definition*
2	Growing stock	All live trees of commercial species, except rough or rotten trees.
3	Rough cull	(a) Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet regional specifications for freedom from defect primarily because of roughness or poor form, and (b) all trees of noncommercial species.
4	Rotten cull	Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, and/or do not meet regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent (66 percent at the Southeastern Station) of the cull volume in a tree is rotten.

15. **CRATIO**
(coded)
I1
Col. 31

Crown ratio—A one-digit code that indicates the percentage of the total tree height that supports a full, live, green, healthy foliage that is effectively contributing to tree growth. (Expressed as a percent of total tree height to the nearest 10 percent and recorded as a one-digit code for all trees 1 inch d.b.h. and larger).

Code	*Crown ratio*
1	0-9 percent
2	10-19 percent
3	20-29 percent
4	30-39 percent
5	40-49 percent
6	50-59 percent
7	60-69 percent
8	70-79 percent
9	80-99 percent

16. **CRCLS**
(coded)
I1
Col. 32

Crown class—A one-digit code that primarily reflects the amount of sunlight received rather than the conventional "crown position" found in forestry textbooks. Recorded as a one-digit code for the following classes:

Code	*Crown class*	*Definition*
1	Open grown	Trees with crowns that have received full light from above and from all sides throughout all or most of their life, particularly during early development.
2	Dominant	Trees with crowns extending above the general level of the crown cover and receiving full light from above and partly from the sides; larger than the average trees in the stand, and with crowns well developed, but possibly somewhat crowded on the sides.
3	Codominant	Trees with crowns forming part of the general level of the crown cover and receiving full light from above, but comparatively little from the side—usually with medium size crowns more or less crowded on the sides.
4	Intermediate	Trees shorter than those in the preceding two classes, but with crowns either below or extending into the crown cover formed by the dominant and codominant trees, receiving little direct light from above, and none from the sides; usually with small crowns very crowded on the sides.
5	Overtopped	Trees with crowns entirely below the general level of the crown cover and receiving no direct light either from above or the sides.

17. **DAMAGE**
(coded)
I2
Col. 33-34

Damage—Damage is recorded for live trees if the presence of damage or pathogen activity is serious enough to reduce the quality or vigor of the tree. When a tree is damaged by more than one agent, the most severe damage is coded. When no damage is observed on a live tree, 00 is recorded. Damage recorded for dead trees is the cause of death. When the cause of death cannot be determined for a tree, 00 is recorded. Each FIA project records specific codes that may differ from one State to the next. These codes fall within the following ranges. For the specific codes used in a particular State, contact the FIA project responsible for that State.

Codes	*Cause of damage*
00	No damage or unknown cause of death
10-19	Insect
20-29	Disease
30-39	Fire
40-49	Animal
50-59	Weather
60-69	Suppression
70-79	Miscellaneous
80-89	Logging
90-99	Form

18. **VOLFAC**
(trees/acre)
F8.4
Col. 35-42

Volume expansion factor—The number of trees per acre (current) that the tree record represents for calculating volume, biomass, number of trees, and growth. Per acre tree values are calculated by multiplying VOLFAC x (NETCFVL, NETCFSL, NETBFVL, TOTBIO, MERBIO, NETCFGR, or NETBFGR) for each tree (record type 30). Totals are calculated by summing the product of per acre values and the appropriate area expander from record 20.

19. **MORTFAC**
(trees/acre/yr)
F8.4
Col. 43-50

Mortality expansion factor—The number of trees per acre per year that the tree record represents for calculating mortality. Mortality per acre is calculated by multiplying MORTFAC x (NETCFVL, NETCFSL, or NETBFVL) for each tree (record type 30). Total mortality is calculated by summing the product of per acre mortality and the appropriate area expander from record 20. This item is zero if the tree does not contribute to the mortality value.

20. **REMVFAC**
(trees/acre/yr)
F8.4
Col. 51-58

Removals expansion factor—The number of trees per acre per year that the tree record represents for calculating removals. Removals per acre are calculated by multiplying REMVFAC x (NETCFVL, NETCFSL, or NETBFVL) for each tree (record type 30). Total removals are calculated by summing the product of expanded per acre removals and the appropriate area expander from record 20. This field should be zero if the tree does not contribute to the removals value.

21. **NETCFVL**
(cubic feet)
F8.4
Col. 59-66

Net cubic foot volume—The net volume of wood in the central stem of a sample tree 5 inches d.b.h. or larger from a 1-foot-tall stump to a minimum 4-inch top d.o.b. or to where the central stem breaks into limbs all of which are less than 4 inches d.o.b. This is a per tree value and must be multiplied by one of the above expansion factors to obtain per acre information. Trees with DBHCUR less than 5 have zero in this field. All trees with DBHCUR 5 or larger (including dead, salvageable dead, and cut trees) have entries in this field.

22. **NETCFSL**
(cubic feet)
F8.4
Col. 67-74

Net cubic foot volume in the saw log—The net volume of wood in the central stem of a sample tree of sawtimber size (9 inches d.b.h. minimum for softwoods, 11 inches d.b.h. minimum for hardwoods) from a 1-foot stump to a minimum top d.o.b. (7 inches for softwoods, 9 inches for hardwoods) or to where the central stem breaks into limbs all of which are less than the minimum top d.o.b. This is a per tree value and must be multiplied by one of the above expansion factors to obtain per acre information. Trees with DBHCUR less than 9.0 (11.0 for hardwoods) should have zero in this field. All larger trees (including dead, salvageable dead, and cut trees) have entries in this field if they are growing-stock trees (TCLASS = 2). All rough and rotten trees (TCLASS = 3 or 4) have zero in this field.

23. **NETBFVL**
(board feet)
F8.4
Col. 75-82

Net board foot volume in the saw log—The net volume of wood in the central stem of a sample tree of sawtimber size (9 inches d.b.h. minimum for softwoods, 11 inches d.b.h. minimum for hardwoods) from a 1-foot stump to a minimum top d.o.b. (7 inches for softwoods, 9 inches for hardwoods) or to where the central stem breaks into limbs all of which are less than the minimum top d.o.b. Volume is based on International 1/4 inch scale. This is a per tree value and must be multiplied by one of the above expansion factors to obtain per acre information. Trees with DBHCUR less than 9 (11 for hardwoods) have zero in this field. All larger trees, including dead, salvageable dead, and cut trees, should have entries in this field if they are growing stock (TCLASS = 2). All rough and rotten trees (TCLASS = 3 or 4) have zero in this field.

Note: NETCFVL, NETCFSL, and NETBFVL are computed values. These volumes are all based on DBHCUR and therefore represent the volume at current inventory for live trees (STATUS = 1) and volume at the time the tree died for dead, salvageable dead, and snags (STATUS = 2, 4, or 5). For

cut trees (STATUS = 3), see the differences in FIA methods presented in DBHCUR. Methods used to compute these volumes are given in the following publications:

North Central:
MN, WI, MI, ND, SD: Hahn 1984
IA, MO, NE, KS: Hahn and Hansen 1991
IL, IN: Smith and Weist 1982
Northeastern:
All States: Scott 1979, 1981
Southeastern:
All States: Cost 1978
Southern:
Current volumes are computed using Simalian's formula with measured merchantable heights and upper stem diameters following procedures described in Grosenbaugh 1964. Volumes for dead and cut trees are computed using regression equations developed by species groups in each survey (see Kelly and Beltz 1987). General information is also contained in selected State survey reports (Rosson *et al.* 1988, McWilliams and Lord 1988, Birdsey and May 1988, Kelly and Sims 1989).

24. **NETCFGR**
(cu.ft./year)
F8.4
Col. 83-90

Net cubic foot growth—The net change in cubic foot volume per year that this tree represents. Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality but can also occur on live trees that have a net loss in volume because of damage, rot, or other causes. Net cubic foot growth on a per acre basis is computed by taking the product of this number and VOLFAC.

25. **NETBFGR**
(bd.ft./year)
F8.4
Col. 91-98

Net board foot growth—The net change in board foot volume per year that this tree represents. This may be a negative number. Net board foot growth on a per acre basis is computed by taking the product of this number and VOLFAC.

26. **TOTBIO**
(green lbs.)
I6
Col. 99-104

Total gross biomass—The total above-ground biomass of a sample tree 1 inch d.b.h. or larger, including all tops and limbs. This is a per tree value and must be multiplied by one of the above expansion factors to obtain per acre information. Recorded in green pounds per tree. This field should have an entry if DBHCUR is 1.0 or larger, regardless of status or TCLASS; zero otherwise.

27. **MERBIO**
(green lbs.)
I6
Col. 105-110

Merchantable biomass—The total gross biomass of a tree 5 inches d.b.h. or larger from a 1-foot stump to a minimum 4-inch top d.o.b. of the central stem. This is a per tree value and must be multiplied by one of the above expansion factors to obtain per acre information. This field should have an entry if DBHCUR is 5.0 or larger, regardless of status or TCLASS; zero otherwise. For dead or cut trees, this number represents their biomass at the time of death or last measurement.

Note: TOTBIO and MERBIO are computed values. These weights are all based on DBHCUR and therefore represent the weight at current inventory for live trees (STATUS = 1) and weight at the time the tree died for dead, salvageable dead, and snags (STATUS = 2, 4, or 5). For cut trees (STATUS = 3), see the differences in FIA methods presented in DBHCUR. Methods used to compute these biomasses are given in the following publications:

North central:
MN, WI, MI, ND, SD: Hahn 1984
IA, MO, NE, KS: Hahn and Hansen 1991
IL, IN: Smith and Weist 1982
Northeastern:
All States: Monteith 1979, Wiant *et al.* 1977
Southeastern:
All States: Cost and McClure 1982
Southern:
All States: Rosson 1989

CHAPTER 4.—USING THE EASTWIDE DATA BASE

The flat file structure of the Eastwide Data Base was designed to be used easily with most data base management systems, statistical packages, or other data summary software. It does not depend on a particular hardware or software system, but the system must accept input in the form of a flat ASCII or EBCDIC file up to 110 characters wide. EWDB files have been loaded and analyzed by a number of commercial software packages, including SAS, ORACLE, dBASE III, RBASE, INGRES, SIR, SPSS, Hypercard, and Foxbase, on hardware ranging from portable microcomputers to large mainframes. Data base management systems that support hierarchical data structures, as well as those based on the relational model, can easily process EWDB files. Chapter 3 should give the user of almost any software package the information needed to input an EWDB file into a processing system.

To assist users of EWDB files and to provide them with a benchmark or checkpoint for comparison to their own data processing systems, the FIA projects provide a set of tables with any EWDB State file. The tables are a set of the core tables produced directly from the EWDB file. These core tables may not match published core tables exactly. Differences will vary by FIA project and relate to rounding error and the allocation of State level estimates down to the county level. Users concerned about differences can request an explanation from the FIA project. Appendix 1 contains an example set of the core tables produced from an EWDB file.

You may wish to duplicate the core tables on your hardware. In doing so, you may find minor differences due to rounding and word length differences between your machine and the machine used to produce the original tables. Users may also want to screen the input data file so that it includes plot and tree records for only a limited geographic area, such as a group of counties. Then you can produce core tables for only that area.

EWDB file users will require the procedure or algorithm used to compute various tree level data and expand it to population level estimates. Table 4 summarizes how this is done for many commonly requested data elements. For example, using table 4, compute the total number of all live trees on timberland in a State from the EWDB file from that State by multiplying the value in VOLFAC on the tree record by the value in EXPVOL on the matching plot record, and summing this product (VOLFAC*EXPVOL) over every tree record where STATUS is equal to one and GLUCUR on the plot record is equal to 20. If you are interested in knowing the current number of live trees over 5.0 inches d.b.h., the process would be the same, except that only tree records with DBHCUR over 5.0 would be included in the summation.

Those familiar with the relational data model and the standard Structured Query Language (SQL) data base language available in many data base management systems will find it easy to load EWDB files into one of these systems and to retrieve information from a loaded data base. EWDB files are written in normal form as defined by the relational model. The two retrievals described in the last paragraph are relatively easy to perform using SQL. The SQL command to obtain the total number of all live trees on timberland in a State from a data base containing data from just that State would be:

```
select    sum(VOLFAC*EXPVOL)
from      PLOT, TREE
where     PLOT.COUNTY = TREE.COUNTY
          and  PLOT.PLTNUM = TREE.PLTNUM
          and  TREE.STATUS = 1
          and  PLOT.GLUCUR = 20
```

and the SQL command to retrieve the same information for trees over 5.0 inches d.b.h. would be:

```
select    sum(VOLFAC*EXPVOL)
from      PLOT, TREE
where     PLOT.COUNTY = TREE.COUNTY
          and  PLOT.PLTNUM = TREE.PLTNUM
          and  TREE.STATUS = 1
          and  PLOT.GLUCUR = 20
          and  DBHCUR > 5.0
```

We suggest that EWDB users accessing with SQL begin with an SQL query designed to retrieve a known quantity in one of the core tables, such as the first example in the last paragraph. Once you verify that your basic retrieval is working correctly, you can modify it to retrieve only the data of interest to you. For example, you may be interested in the volume of select white oak sawtimber in trees at least 20 inches d.b.h. in a four-county area. Begin by testing a retrieval to get the total sawtimber volume in the four-county area, using the following SQL query:

```
select    sum(NETBFVL*VOLFAC*EXPVOL)
from      PLOT, TREE
where     PLOT.COUNTY = TREE.COUNTY
          and  PLOT.PLTNUM = TREE.PLTNUM
          and  TREE.STATUS = 1
          and  PLOT.GLUCUR = 20
          and  TCLASS = 2
          and  (PLOT.COUNTY = C1 or
                PLOT.COUNTY = C2 or
                PLOT.COUNTY = C3 or
                PLOT.COUNTY = C4)
```

where C1, C2, C3, and C4 are the county codes of the four counties of interest. Once you verify that this query is working by comparing the total volume retrieved to core table 15, you can modify the query to get only select white oak trees (SPPGRP = 10) at least 20 inches in d.b.h. This SQL query would look like this:

```
select    sum(NETBFVL*VOLFAC*EXPVOL)
from      PLOT, TREE
where     PLOT.COUNTY = TREE.COUNTY
          and  PLOT.PLTNUM = TREE.PLTNUM
          and  TREE.STATUS = 1
          and  PLOT.GLUCUR = 20
          and  TCLASS = 2
          and  (PLOT.COUNTY = C1 or
                PLOT.COUNTY = C2 or
                PLOT.COUNTY = C3 or
                PLOT.COUNTY = C4)
          and  TREE.SPPGRP = 10
          and  DBHCUR >= 20.0
```

Those using EWDB files to estimate any population level quantity should always be aware of the number of plot and tree measurements that the estimate is based on. For small geographic areas or very specific criteria, the number of plots will be small. In the last example, the user could easily find out how many sample plots the retrieval was based on. The following retrieval would count the number of timberland plots within the four-county area used in the last example:

```
select    count(*)
from      PLOT
where     and GLUCUR = 20
          and (COUNTY = C1 or COUNTY = C2
               or COUNTY = C3 or
               COUNTY = C4)
```

To obtain the number of trees measured that met the criteria—live select white oak, at least 20 inches d.b.h. within the four-county area—the following retrieval would be run:

```
select    count(*)
from      PLOT, TREE
where     PLOT.COUNTY = TREE.COUNTY
          and  PLOT.PLTNUM = TREE.PLTNUM
          and  TREE.STATUS = 1
          and  PLOT.GLUCUR = 20
          and  TCLASS = 2
          and  (PLOT.COUNTY = C1 or
                PLOT.COUNTY = C2 or
                PLOT.COUNTY = C3 or
                PLOT.COUNTY = C4)
          and  TREE.SPPGRP = 10
          and  DBHCUR >= 20.0
```

This type of information should give the EWDB user an idea of the reliability of the data retrieved from EWDB files. Retrievals based on just a few plots or trees have high sampling errors.

For those interested in obtaining additional information on SQL, many references are available, including Date 1986, 1987; Cronin 1989; Cardenas 1979; and Everest 1986. Many of the data base management systems that support SQL have excellent user manuals and tutorial guides. Many of these systems also support enhancements that go beyond standard SQL, allowing additional flexibility and formatting of output, or that take advantage of other features of the data base management system.

Table 4.—*Algorithms to expand tree level items to population estimates from EWDB files. Each item is computed by summing the corresponding quantity over all trees that meet test requirements.*

Item	Quantity	Test
Current number of trees on timberland		
All live	NTRAL=VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1
Growing stock	NTRGS=VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=2
Rough	NTRRG=VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=3
Rotten	NTRRT=VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=4
Salvageable dead	NTRSD=VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=4
Current volume on timberland		
All live merchantable	VOLAL=NETCFVL*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1
Growing stock	VOLGS=NETCFVL*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=2
Saw log portion	VOLCS=NETCFSL*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=2
Sawtimber	VOLSW=NETBFVL*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=2
Rough trees	VOLRG=NETCFVL*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=3
Rotten trees	VOLRT=NETCFVL*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1 AND TCLASS=4
Salvageable dead	VOLSD=NETCFVL*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=4
Net growth on timberland		
Growing stock	GROGS=NETCFGR*VOLFAC*EXPGRO	GLUCUR=20 OR GLUOLD=2O
Sawtimber	GROSW=NETBFGR*VOLFAC*EXPGRO	GLUCUR=20 OR GLUOLD=2O
Annual mortality on timberland		
Growing stock	MORGS = NETCFVL*MORTFAC*EXPMOR	GLUCUR=20 OR GLUOLD=2O AND TCLASS=2
Sawtimber	MORSW = NETBFVL*MORTFAC*EXPMOR	GLUCUR=20 OR GLUOLD=2O AND TCLASS=2
Average annual removals from timberland		
Growing stock	REMGS = NETCFVL*REMVFAC*EXPREM	TCLASS=2
Sawtimber	REMSW = NETBFVL*REMVFAC*EXPREM	TCLASS=2
Biomass on timberland		
All live total	BIOAL = TOTBIO*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1
All live merchantable	BIOMR = MERBIO*VOLFAC*EXPVOL	GLUCUR=20 AND STATUS=1

CHAPTER 5.—ORDERING DATA

Eastwide Data Base files for a State must be obtained from the FIA project responsible for the State's inventory (fig. 1, table 5). Currently, files can be obtained from all projects on standard 9-track tapes (1600 or 6250 BPI, ASCII, or EBCDIC) at a charge of $500 per State to cover the cost of producing files and maintaining the EWDB system. Use the form on the next page to order a particular EWDB file. Table 5 lists each State in the EWDB system, the date of the last inventory, the date when the next inventory is scheduled to be completed, and the approximate size of the EWDB files. These figures are only estimates based on projected budgets at the time this report was written. For current information on a particular State, contact the appropriate FIA project.

Some projects may be able to provide EWDB files as MS-DOS ASCII files on a medium more easily read by microcomputers that use the MS-DOS operating system. Because technology and equipment for data storage and transportation are rapidly changing, some projects may be able to provide EWDB files on diskettes, Bernoulli cartridges, or laser disks for an additional charge. This information is available from the individual projects.

Table 5.—*Status and size of each EWDB State file*

Station-State	Date of last inventory	Completion date of next inventory	Size of EWDB (megabytes)[1]
North Central			
Illinois	1985	1996	5
Indiana	1986	1997	10
Iowa	1990	2000	2
Kansas	1981	1994	5
Michigan	1980	1993	22
Minnesota	1990	2001	23
Missouri	1989	1999	19
Nebraska	1983	1994	2
N. Dakota	1980	1994	3
S. Dakota	1980	1994	3
Wisconsin	1983	1995	17
Northeastern			
Connecticut	1984	1996	1
Delaware	1986	1997	1
Kentucky	1987	1998	7
Maine	1982	1994	6
Maryland	1985	1997	3
Massachusetts	1984	1996	1
New Hampshire	1983	1995	2
New Jersey	1986	1996	1
New York	1980	1993	6
Ohio	1979	1990	7
Pennsylvania	1978	1990	11
Rhode Island	1984	1996	1
Vermont	1983	1995	2
West Virginia	1988	1998	9
Southeastern			
Florida	1987	1994	10
Georgia	1989	1996	17
N. Carolina	1990	1997	12
S. Carolina	1986	1993	9
Virginia	1992	1999	10
Southern			
Alabama	1990	1998	10
Arkansas	1988	1995	14
Louisiana	1991	1991	7
Mississippi	1987	1994	13
Oklahoma	1986	1993	3
Tennessee	1989	1996	8
Texas	1986	1992	9

[1] *Current inventory.*

_____
(Place)

_____
(Date)

Director (Circle appropriate station)

North Central Forest Experiment Station
1992 Folwell Avenue
St. Paul, MN 55108

Northeastern Forest Experiment Station
5 Radnor Corp. Center
100 Matsonford Rd.
Suite 200
Radnor, PA 19087

Southeastern Forest Experiment Station
PO Box 2680
Asheville, NC 28802

Southern Forest Experiment Station
701 Loyola Avenue
New Orleans, LA 70112

Dear Sir:

Under the authority of the Forest and Rangeland Renewable Resources Research Act of 1978 (92 Stat. 353, PL 95-307), we desire to cooperate with this forest experiment station in distributing the results of Forest Survey findings.

This forest experiment station is requested to furnish data files in the EWDB format for States as described below. We agree to contribute to the Station the sum of $500 per State to help defray the computer cost of compiling these data.

This contribution will be mutually beneficial because it will facilitate the dissemination of research information to interested parties, which is the aim of our organization and of this forest experiment station.

No member of, or Delegate to, Congress, or Residence Commissioner, shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom, unless it is made with a corporation for its general benefit.

Sincerely,

_____
(Name of Cooperator)

_____
(Signature)

_____
(Title)

Accepted for the _____ Forest
Experiment Station_____
(Date)

_____
(Signature)

_____
(Title)

Eastwide Data Base File Request Form

State inventory files being requested: (list each State and the date of the inventory)

_____

_____

Format:

_____ 9 track tape.
____1600BPI ____6250BPI (check one)
____ASCII ____EBCDIC (check one)
____Records per block. All files are fixed length (110 characters/record). Indicate a number of records per block that your system can read.

_____ Other format. Other formats available vary by FIA project. Check with them before ordering other than 9 track tapes. Describe alternative format below:

_____

_____

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Appendix 1

Eastwide Core Tables

This appendix contains examples of the eastern core tables that are included in all FIA inventory reports. Tables in reports may sometimes differ slightly from the basic format because of regional differences and local needs and problems. Classes that do not contain any data will not be reported. For example, in Iowa there is no National Forest land, so a column headed "National forest" will not appear in any table by ownership class. In some regions, more detailed data may be important, so a heading may be broken down into subheadings. For example, in the South, it is important to distinguish differences between natural and planted pines. The pine species and forest type headings for core tables in many Southern States will be broken down further to meet the need for more specific data. In some instances, data may not always be available at the county level, and county data may need to be combined under broader headings. Variations should not be drastic enough to compromise the standardization of the tables.

Table 1.--Area of land by county and major land-use class
(In thousand acres)

County	Total land area	Forest land					Nonforest land
		All forest land	Timberland	Other forest land	Reserved timberland	Reserved other forest land	
County 1	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 2	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 3	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
All counties	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

Table 2.--Area of timberland by county and ownership class
(In thousand acres)

County	All owners	Ownership class									
		National Forest	BLM	Indian lands	Other federal	State	County and municipal	Forest industry[1]	Farmer	Corporate	Individual
County 1	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 2	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 3	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.
All counties	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

[1] Includes lands leased to Forest Industry.

Table 3.--Area of timberland by county and forest type group
(In thousand acres)

County	All types	Forest type group										
		White-red-jack pine	Spruce-fir	Longleaf-slash pine	Loblolly-shortleaf pine	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech-birch	Aspen-birch	Non-stocked
County 1	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 2	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 3	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.
All counties	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

Table 4.--Area of timberland by county and stand-size class
(In thousand acres)

County	All classes	Stand-size class			
		Sawtimber	Poletimber	Seedling & sapling	Nonstocked
County 1	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 2	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 3	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
All counties	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

Table 5.--Area of timberland by county and site productivity class
(In thousand acres)

County	All classes	Site productivity class (cubic feet of growth per acre per year)				
		165+	120-164	85-119	50-84	20-49
County 1	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 2	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 3	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
All counties	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

Table 6.--Area of timberland by county and stocking class of growing-stock trees
(In thousand acres)

County	All classes	Stocking percent of growing-stock trees				
		Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked
County 1	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 2	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County 3	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
All counties	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

Table 7.--Area of timberland by forest type group and ownership class
(In thousand acres)

Forest type group	All owners	Ownership class									
		National forest	BLM	Indian lands	Other federal	State	County and municipal	Forest industry[1]	Farmer	Corporate	Individual
White-red-jack pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Spruce-fir	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Longleaf-slash pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Loblolly-shortleaf pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Oak-pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Oak-hickory	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Oak-gum-cypress	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Elm-ash-cottonwood	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Maple-beech-birch	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Aspen-birch	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Non-stocked	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
All counties	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

[1] Includes lands leased to Forest Industry.

Table 8.--Area of timberland by ownership and stocking class of growing-stock trees
(In thousand acres)

Ownership class	All classes	Stocking percent of growing-stock trees				
		Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked
National Forest	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
BLM	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Indian	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Other Federal	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
State	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
County & municipal	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Forest industry[1]	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Farmer	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Corporate	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Individual	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
All owners	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

[1] Includes lands leased to Forest Industry.

Table 9.--Area of timberland by forest type group and stand-size class
(In thousand acres)

Forest type group	All classes	Stand-size class			
		Sawtimber	Poletimber	Seedling & sapling	Nonstocked
White-red-jack pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Spruce-fir	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Longleaf-slash pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Loblolly-shortleaf pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Oak-pine	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Oak-hickory	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Oak-gum-cypress	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Elm-ash-cottonwood	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Maple-beech-birch	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Aspen-birch	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
Non-stocked	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x
All types	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x	x,xxx.x

Table 10.--Number of all live trees on timberland by species group and diameter class
(In thousand trees)

Species group	All classes	Diameter class (inches at breast height)											
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Softwoods													
Longleaf & slash pine	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
Other softwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Hardwoods													
Select white oaks	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
Noncommercial	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 11.--Number of growing-stock trees on timberland by species group and diameter class
(In thousand trees)

Species group	All classes	Diameter class (inches at breast height)											
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Softwoods													
Longleaf & slash pine	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
Other softwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Hardwoods													
Select white oaks	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.
Other hard hardwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 12.--Net volume of growing-stock trees on timberland by species group and diameter class
(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Softwoods											
Longleaf & slash pine	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.
Other softwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Hardwoods											
Select white oaks	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.
Other hard hardwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 13.--Net volume of growing-stock in the saw log portion of sawtimber trees on timberland by species group and diameter class
(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Softwoods									
Longleaf & slash pine	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
Other softwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Hardwoods									
Select white oaks	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
Other hard hardwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 14.--Net volume of sawtimber trees on timberland by species group and diameter class
(In thousand board feet)

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Softwoods									
Longleaf & slash pine	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
Other softwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Hardwoods									
Select white oaks	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
Other hard hardwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 15.--Net volume of growing-stock and sawtimber trees on timberland by county and species group

County	Growing stock					Sawtimber				
		Species group					Species group			
	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods
	Thousand cubic feet					*Thousand board feet*				
County 1	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County 2	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County 3	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
All counties	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 16.--Net volume of timber on timberland by class of timber and species group
(In thousand cubic feet)

Class of timber	All species	Species group			
		Pine	Other softwoods	Soft hardwoods	Hard hardwoods
Live trees					
Growing-stock trees					
Sawtimber					
Saw-log portion	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Upper stem portion	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Poletimber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All growing-stock trees	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Cull trees					
Rough trees					
Sawtimber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Poletimber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Rotten trees					
Sawtimber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Poletimber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All cull trees	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All live trees	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Salvable dead trees					
Sawtimber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Poltetimber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All classes of timber	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 17.--Net volume of live and growing-stock trees on timberland by ownership class and species group
(In thousand cubic feet)

Ownership class	Live trees					Growing stock				
		Species group					Species group			
	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods
National Forest	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
BLM	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Indian	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Other Federal	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
State	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County & municipal	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Forest industry[1]	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Farmer	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Corporate	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Individual	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All owners	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

[1] Includes lands leased to forest industry.

Table 18.–Average net annual growth of growing stock and sawtimber on timberland by county and species group

County	Growing stock					Sawtimber				
		Species group					Species group			
	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods
	Thousand cubic feet					*Thousand board feet*				
County 1	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County 2	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County 3	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
All counties	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 19.–Average annual removals of growing stock and sawtimber on timberland by county and species group

County	Growing stock					Sawtimber				
		Species group					Species group			
	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods
	Thousand cubic feet					*Thousand board feet*				
County 1	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County 2	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County 3	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
All counties	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Table 20.–Average net annual growth and average annual removals of growing-stock trees on timberland by species group (In thousand cubic feet)

Species group	Growing stock	
	Growth	Removals
Softwoods		
Longleaf & slash pine	xxx,xxx	xxx,xxx
.	.	.
.	.	.
.	.	.
Other softwoods	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx
Hardwoods		
Select white oaks	xxx,xxx	xxx,xxx
.	.	.
.	.	.
.	.	.
Other hard hardwoods	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx

Table 21.–Average net annual growth and average annual removals of sawtimber trees on timberland by species group (In thousand board feet)

Species group	Sawtimber	
	Growth	Removals
Softwoods		
Longleaf & slash pine	xxx,xxx	xxx,xxx
.	.	.
.	.	.
.	.	.
Other softwoods	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx
Hardwoods		
Select white oaks	xxx,xxx	xxx,xxx
.	.	.
.	.	.
.	.	.
Other hard hardwoods	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx

Table 22.--Average annual mortality of growing stock and sawtimber on timberland by species group

Species group	Growing stock	Sawtimber
	Thousand cubic feet	*Thousand board feet*
Softwoods		
Longleaf & slash pine	xxx,xxx	xxx,xxx
.	.	.
.	.	.
Other softwoods	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx
Hardwoods		
Longleaf & slash pine	xxx,xxx	xxx,xxx
.	.	.
.	.	.
Other softwoods	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx

Table 23.--Average net annual growth and average annual removals of growing stock on timberland by ownership class and species group
(In thousand cubic feet)

	Growth					Removals				
		Species group					Species group			
Ownership class	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods
National Forest	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
BLM	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Indian	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Other Federal	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
State	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County & municipal	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Forest industry[1]	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Farmer	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Corporate	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Individual	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All owners	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

[1] Includes lands leased to forest industry.

Table 24.--Average net annual growth and average annual removals of sawtimber on timberland by ownership class and species group
(In thousand board feet)

	Growth					Removals				
		Species group					Species group			
Ownership class	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods
National Forest	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
BLM	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Indian	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Other Federal	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
State	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
County & municipal	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Forest industry[1]	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Farmer	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Corporate	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Individual	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All owners	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

[1] Includes lands leased to forest industry.

Table 25--Net volume of sawtimber on timberland by species group and tree grade
(In thousand board feet)

Species group	All grades	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Softwoods						
Longleaf & slash pine	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Other softwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Hardwoods						
Select white oaks	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Other hard hardwoods	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
Total	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx
All species	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx	xxx,xxx

Appendix 2

FIA Survey Unit Names and Codes

North Central

Illinois
- 1 Southern
- 2 Claypan
- 3 Prairie

Indiana
- 1 Lower Wabash
- 2 Knobs
- 3 Upland Flats
- 4 Northern

Iowa
- 1 Northeastern
- 2 Southeastern
- 3 Southwestern
- 4 Northwestern

Kansas
- 1 Northeastern
- 2 Southeastern
- 3 Western

Michigan
- 1 Eastern Upper Peninsula
- 2 Western Upper Peninsula
- 3 Northern Lower Peninsula
- 4 Southern Lower Peninsula

Minnesota
- 1 Aspen-Birch
- 2 Northern Pine
- 3 Central Hardwood
- 4 Prairie

Missouri
- 1 Eastern Ozarks
- 2 Southwestern Ozarks
- 3 Northwestern Ozarks
- 4 Prairie
- 5 Riverborder

Nebraska
- 1 Eastern
- 2 Western

North Dakota
- 1 Eastern
- 2 Western

South Dakota
- 1 Eastern
- 2 Western

Wisconsin
- 1 Northeastern
- 2 Northwestern
- 3 Central
- 4 Southwestern
- 5 Southeastern

Southeastern

Florida
- 1 Northeastern
- 2 Northwestern
- 3 Central
- 4 Southern

Georgia
- 1 Southeastern
- 2 Southwestern
- 3 Central
- 4 North Central
- 5 Northern

North Carolina
- 1 Southern Coastal Plain
- 2 Northern Coastal Plain
- 3 Piedmont
- 4 Mountains

South Carolina
- 1 Southern Coastal Plain
- 2 Northern Coastal Plain
- 3 Piedmont

Virginia
- 1 Coastal Plain
- 2 Southern Piedmont
- 3 Northern Piedmont
- 4 Northern Mountains
- 5 Southern Mountains

Southern

Alabama
- 1 Southwest-South
- 2 Southwest-North
- 3 Southeast
- 4 West Central
- 5 North Central
- 6 North

Arkansas
- 1 South Delta
- 2 North Delta
- 3 Southwest
- 4 Ouachita
- 5 Ozark

Louisiana
- 1 North Delta
- 2 South Delta
- 3 Southwest
- 4 Southeast
- 5 Northwest

Mississippi
- 1 Delta
- 2 North
- 3 Central
- 4 South
- 5 Southwest

Oklahoma
- 1 Southeast
- 2 Northeast

Tennessee
- 1 West
- 2 West Central
- 3 Central
- 4 Plateau
- 5 East

Texas
- 1 Southeast
- 2 Northeast

Northeastern

Kentucky
- 1 Eastern
- 2 Northern Cumberland
- 3 Southern Cumberland
- 4 Bluegrass
- 5 Pennyroyal
- 6 Western Coalfield
- 7 Western

Maine
- 1 Washington
- 2 Aroostook
- 3 Penobscot
- 4 Hancock
- 5 Piscataquis
- 6 Capitol Region
- 7 Somerset
- 8 Casco Bay
- 9 Western Maine

Maryland
- 2 North Central
- 3 Southern
- 4 Lower Eastern Shore
- 5 Western

New Hampshire
- 2 Northern
- 3 Southern

New York
- 1 Adirondack
- 2 Lake Plain
- 3 Western Adirondack
- 4 Eastern Adirondack
- 5 Southwest Highlands
- 6 South-Central Highlands
- 7 Capitol District
- 8 Catskill-Lower Hudson

Ohio
- 1 South-Central
- 2 Southeastern
- 3 East-Central
- 4 Northeastern
- 5 Southwestern
- 6 Northwestern

Pennsylvania
- 5 Western
- 6 North Central
- 7 Southwestern
- 8 Pocono
- 9 Southeastern
- 0 South Central

Vermont
- 2 Northern
- 3 Southern

West Virginia
- 2 Northeastern
- 3 Southern
- 4 Northwestern

These States are not divided into units:
- Connecticut
- Delaware
- Massachusetts
- New Jersey
- Rhode Island

Appendix 3

Species Groups Used by Eastern FIA Projects

Table 6 shows how Forest Inventory and Analysis projects group trees of various species (SPP) into the 28 groups (SPPGRP) in the EWDB and into the 4 groups (pine, other softwoods, soft hardwoods, and hard hardwoods) used in many of the core tables. FIA projects differ somewhat in the species codes they recognize, especially for minor species or at the edge of a species range. The last four columns of this table show which species each FIA project recognizes. An X in a column indicates that species is used; the absence of an X indicates that either the species has never been found in that region, or that the project codes that species some other way. For example, there is no X under NC for fraser fir because the North Central FIA project has never found this species on any FIA plot in the region and does not recognize it as a species. Also, the North Central FIA project does not ever use SPP 10 (fir sp.). This code is used by the Southeastern and Northeastern FIA projects for miscellaneous firs that are only identified to the genus level. The list is ordered by SPP code number. Codes 1-299 are softwood species. Codes 300-999 are hardwood species. Within these two groups, species are ordered alphabetically by genus and species except for codes 980-999, which are all uncommon or exotic species that have been added to the list.

Table 6.—*Species and species groups included in Eastwide Data Base*

SPP	Common name	Genus	Species	SPPGRP	Core table group	Species occurrence by FIA project			
						NC	NE	SO	SE
010	fir sp.	*Abies*	sp.	6	2	.	X	.	X
012	balsam fir	*Abies*	*balsamea*	6	2	X	X	X	.
016	Fraser fir	*Abies*	*fraseri*	9	2	.	.	X	.
043	Atlantic white-cedar	*Chamaecyparis*	*thyoides*	9	2	.	X	X	X
060	redcedar	*Juniperus*	sp.	9	2	.	X	.	X
066	Rocky Mountain juniper	*Juniperus*	*scopulorum*	9	2	X	.	.	.
067	southern redcedar	*Juniperus*	*silicicola*	9	2	.	.	X	.
068	eastern redcedar	*Juniperus*	*virginiana*	9	2	X	X	X	.
070	larch (introduced)	*Larix*	sp.	9	2	X	X	.	.
071	tamarack (native)	*Larix*	*laricina*	9	2	X	X	.	.
090	spruce	*Picea*	sp.	6	2	.	X	.	X
091	Norway spruce	*Picea*	*abies*	9	2	X	X	.	.
093	Engelmann spruce	*Picea*	*engelmannii*	9	2	X	X	.	.
094	white spruce	*Picea*	*glauca*	6	2	X	X	.	.
095	black spruce	*Picea*	*mariana*	6	2	X	X	X	.
096	blue spruce	*Picea*	*pungens*	9	2	X	X	.	.
097	red spruce	*Picea*	*rubens*	6	2	.	X	X	.
105	jack pine	*Pinus*	*banksiana*	5	1	X	X	.	.
107	sand pine	*Pinus*	*clausa*	3	1	.	.	X	X
110	shortleaf pine	*Pinus*	*echinata*	2	1	X	X	X	X
111	slash pine	*Pinus*	*elliottii*	1	1	.	.	X	X
115	spruce pine	*Pinus*	*glabra*	3	1	.	.	X	X
121	longleaf pine	*Pinus*	*palustris*	1	1	.	.	X	X
122	ponderosa pine	*Pinus*	*ponderosa*	9	1	X	.	X	.
123	Table Mountain pine	*Pinus*	*pungens*	3	1	.	X	X	X
125	red pine	*Pinus*	*resinosa*	4	1	X	X	.	.
126	pitch pine	*Pinus*	*rigida*	3	1	.	X	X	X
128	pond pine	*Pinus*	*serotina*	3	1	.	X	X	X

* *White pine is given a core table group number of 2 in States inventoried by the Southeastern FIA project.*

(*table 6 continued on next page*)

(table 6 continued)

SPP	Common name	Genus	Species	SPPGRP	Core table group	Species occurrence by FIA project NC	NE	SO	SE
129	eastern white pine	*Pinus*	*strobus*	4	1*	X	X	X	X
130	Scotch pine	*Pinus*	*sylvestris*	3	1	X	X	.	.
131	loblolly pine	*Pinus*	*taeda*	2	1	X	X	X	X
132	Virginia pine	*Pinus*	*virginiana*	3	1	X	X	X	X
133	Austrian pine	*Pinus*	*nigra*	9	1	X	X	.	.
202	Douglas-fir	*Pseudotsuga*	*menziesii*	9	2	X	.	.	.
221	baldcypress	*Taxodium*	*distichum*	8	2	X	X	X	X
222	pondcypress	*Taxodium*	*distichum* var. *nutans*	8	2	.	X	.	X
241	northern white-cedar	*Thuja*	*occidentalis*	9	2	X	X	X	.
260	hemlock	*Tsuga*	sp.	7	2	.	X	.	X
261	eastern hemlock	*Tsuga*	*canadensis*	7	2	X	X	X	.
262	Carolina hemlock	*Tsuga*	*caroliniana*	7	2	.	X	X	.
300	acacia	*Acacia*	sp.	26	3	X	.	.	.
311	Florida maple	*Acer*	*barbatum*	16	4	.	.	X	X
313	boxelder	*Acer*	*negundo*	26	3	X	X	X	X
314	black maple	*Acer*	*nigrum*	16	4	X	X	X	.
315	striped maple	*Acer*	*pensylvanicum*	28	3	X	X	.	X
316	red maple	*Acer*	*rubrum*	17	3	X	X	X	X
317	silver maple	*Acer*	*saccharinum*	17	3	X	X	X	X
318	sugar maple	*Acer*	*saccharum*	16	4	X	X	X	X
319	mountain maple	*Acer*	*spicatum*	28	4	X	X	.	X
321	Rocky Mountain maple	*Acer*	*glabrum*	28	4	X	.	.	.
330	buckeye, horsechestnut	*Aesculus*	sp.	26	3	.	X	.	X
331	Ohio buckeye	*Aesculus*	*glabra*	26	3	X	X	X	.
332	yellow buckeye	*Aesculus*	*octandra*	26	3	.	X	X	.
333	buckeye (except 331, 332)	*Aesculus*	sp.	26	3	X	.	X	.
341	ailanthus	*Ailanthus*	*altissima*	28	3	X	X	X	X
355	serviceberry	*Amelanchier*	sp.	28	4	.	X	X	X
367	pawpaw	*Asimina*	*triloba*	28	3	.	X	.	.
370	birch sp.	*Betula*	sp.	27	4	.	.	.	X
371	yellow birch	*Betula*	*alleghaniensis*	15	4	X	X	X	X
372	sweet birch	*Betula*	*lenta*	27	4	X	X	X	.
373	river birch	*Betula*	*nigra*	26	3	X	X	X	.
374	water birch	*Betula*	*occidentalis*	26	3	X	X	.	.
375	paper birch	*Betula*	*papyrifera*	26	3	X	X	.	.
379	gray birch	*Betula*	*populifolia*	26	3	X	X	X	.
381	chittamwood, gum bumelia	*Bumelia*	*lanuginosa*	28	4	X	.	X	.
391	American hornbeam, musclewood	*Carpinus*	*caroliniana*	28	4	X	X	X	X
400	hickory sp.	*Carya*	sp.	14	4	.	X	X	X
401	water hickory	*Carya*	*aquatica*	14	4	X	X	X	.
402	bitternut hickory	*Carya*	*cordiformis*	14	4	X	X	.	.
403	pignut hickory	*Carya*	*glabra*	14	4	X	X	.	.
404	pecan	*Carya*	*illinoensis*	14	4	X	X	X	.
405	shellbark hickory	*Carya*	*laciniosa*	14	4	X	X	.	.
407	shagbark hickory	*Carya*	*ovata*	14	4	X	X	.	.
408	black hickory	*Carya*	*texana*	14	4	X	X	.	.
409	mockernut hickory	*Carya*	*tomentosa*	14	4	X	X	.	.
421	American chestnut	*Castanea*	*dentata*	27	4	X	X	X	X
422	Allegheny chinkapin	*Castanea*	*pumila*	26	3	.	.	X	.
423	Ozark chinkapin	*Castanea*	*ozarkensis*	26	3	X	.	.	.
430	chinkapin	*Castanopsis*	sp.	28	4	.	.	X	X
450	catalpa	*Catalpa*	sp.	26	3	.	X	X	.

(table 6 continued on next page)

(table 6 continued)

SPP	Common name	Genus	Species	SPPGRP	Core table group	Species occurrence by FIA project NC	NE	SO	SE
451	southern catalpa	*Catalpa*	*bignonioides*	28	4	.	.	.	X
452	northern catalpa	*Catalpa*	*speciosa*	26	3	X	X	.	.
460	hackberry sp.	*Celtis*	sp.	26	3	.	.	.	X
461	sugarberry	*Celtis*	*laevigata*	26	3	X	X	X	.
462	hackberry	*Celtis*	*occidentalis*	26	3	X	X	X	.
471	eastern redbud	*Cercis*	*canadensis*	28	3	X	X	X	X
491	flowering dogwood	*Cornus*	*florida*	27	4	X	X	X	X
500	hawthorn	*Crataegus*	sp.	28	4	X	X	X	.
521	common persimmon	*Diospyros*	*virginiana*	27	4	X	X	X	X
531	American beech	*Fagus*	*grandifolia*	18	4	X	X	X	X
540	ash	*Fraxinus*	sp.	21	4	.	X	.	X
541	white ash	*Fraxinus*	*americana*	21	3	X	X	X	.
543	black ash	*Fraxinus*	*nigra*	21	4	X	X	X	.
544	green ash	*Fraxinus*	*pennsylvanica*	21	3	X	X	X	.
545	pumpkin ash	*Fraxinus*	*profunda*	21	3	X	.	X	.
546	blue ash	*Fraxinus*	*quadrangulata*	21	4	X	X	X	.
551	waterlocust	*Gleditsia*	*aquatica*	27	4	X	.	X	.
552	honeylocust	*Gleditsia*	*triacanthos*	27	4	X	X	X	X
555	loblolly-bay	*Gordonia*	*lasianthus*	26	3	.	.	.	X
571	Kentucky coffeetree	*Gymnocladus*	*dioicus*	27	4	X	X	X	.
580	silverbell	*Halesia*	sp.	26	3	.	.	X	X
591	American holly	*Ilex*	*opaca*	27	4	.	X	X	X
601	butternut	*Juglans*	*cinerea*	26	3	X	X	X	X
602	black walnut	*Juglans*	*nigra*	25	4	X	X	X	X
611	sweetgum	*Liquidambar*	*styraciflua*	19	3	X	X	X	X
621	yellow-poplar	*Liriodendron*	*tulipifera*	24	3	X	X	X	X
641	Osage-orange	*Maclura*	*pomifera*	28	4	X	X	X	X
650	magnolia sp.	*Magnolia*	sp.	26	3	.	X	.	.
651	cucumbertree	*Magnolia*	*acuminata*	26	3	X	X	X	X
652	southern magnolia	*Magnolia*	*grandiflora*	26	3	.	.	X	X
653	sweetbay	*Magnolia*	*virginiana*	26	3	.	X	X	X
654	bigleaf magnolia	*Magnolia*	*macrophylla*	28	4	.	.	X	.
660	apple sp.	*Malus*	sp.	28	4	X	X	X	X
680	mulberry sp.	*Morus*	sp.	27	4	.	.	.	X
681	white mulberry	*Morus*	*alba*	27	4	X	X	X	.
682	red mulberry	*Morus*	*rubra*	27	4	X	X	X	.
691	water tupelo	*Nyssa*	*aquatica*	20	3	X	X	X	X
692	ogeechee tupelo	*Nyssa*	*ogeche*	28	4	.	.	.	X
693	blackgum	*Nyssa*	*sylvatica*	20	3	X	X	X	X
694	swamp tupelo	*Nyssa*	*sylvatica* var. *biflora*	20	3	X	.	X	X
701	eastern hophornbeam, ironwood	*Ostrya*	*virginiana*	28	4	X	X	X	X
711	sourwood	*Oxydendrum*	*arboreum*	28	4	.	X	X	X
712	Paulownia, Empress tree	*Paulownia*	*tomentosa*	26	3	.	X	X	X
721	redbay	*Persea*	*borbonia*	26	3	.	.	X	X
731	sycamore	*Platanus*	*occidentalis*	26	3	X	X	X	X
740	cottonwood	*Populus*	spp.	22	3	.	X	X	X
741	balsam poplar	*Populus*	*balsamifera*	22	3	X	X	.	.
742	eastern cottonwood	*Populus*	*deltoides*	22	3	X	X	.	.
743	bigtooth aspen	*Populus*	*grandidentata*	22	3	X	X	.	.
744	swamp cottonwood	*Populus*	*heterophylla*	22	3	X	X	.	.
745	plains cottonwood	*Populus*	*sargentii*	22	3	X	.	.	.
746	quaking aspen	*Populus*	*tremuloides*	22	3	X	X	.	.
752	silver poplar	*Populus*	*alba*	22	3	X	.	.	.

(table 6 continued on next page)

(table 6 continued)

SPP	Common name	Genus	Species	SPPGRP	Core table group	Species occurrence by FIA project NC	NE	SO	SE
753	narrowleaf cottonwood	*Populus*	*angustifolia*	22	3	X	.	.	.
760	cherry, plum spp.	*Prunus*	sp.	28	4	.	.	.	X
761	pin cherry	*Prunus*	*pensylvanica*	28	3	X	X	.	.
762	black cherry	*Prunus*	*serotina*	26	3	X	X	X	X
763	chokecherry	*Prunus*	*virginiana*	28	4	X	X	.	.
764	plums, cherries, except 762	*Prunus*	sp.	28	4	.	.	X	.
765	Canada plum	*Prunus*	*nigra*	28	4	X	.	.	.
766	wild plum	*Prunus*	*americana*	28	4	X	.	.	.
802	white oak	*Quercus*	*alba*	10	4	X	X	X	X
804	swamp white oak	*Quercus*	*bicolor*	10	4	X	X	X	X
806	scarlet oak	*Quercus*	*coccinea*	13	4	X	X	X	X
808	Durand oak	*Quercus*	*durandii*	20	4	.	.	X	.
809	northern pin oak	*Quercus*	*ellipsoidalis*	13	4	X	X	.	.
812	southern red oak	*Quercus*	*falcata* var. *falcata*	13	4	X	X	X	X
813	cherrybark oak, swamp red oak	*Quercus*	*falcata* var. *pagodaefolia*	11	4	X	X	X	X
816	bear oak, scrub oak	*Quercus*	*ilicifolia*	28	4	.	X	.	X
817	shingle oak	*Quercus*	*imbricaria*	13	4	X	X	X	X
819	turkey oak	*Quercus*	*laevis*	28	4	.	.	X	X
820	laurel oak	*Quercus*	*laurifolia*	13	4	.	X	X	X
822	overcup oak	*Quercus*	*lyrata*	12	4	X	X	X	X
823	bur oak	*Quercus*	*macrocarpa*	10	4	X	X	X	X
824	blackjack oak	*Quercus*	*marilandica*	13*	4	X	X	X	X
825	swamp chestnut oak	*Quercus*	*michauxii*	10	4	X	X	X	X
826	chinkapin oak	*Quercus*	*muehlenbergii*	10	4	X	X	X	X
827	water oak	*Quercus*	*nigra*	13	4	X	X	X	X
828	Nuttall oak	*Quercus*	*nuttallii*	13	4	.	.	X	.
830	pin oak	*Quercus*	*palustris*	13	4	X	X	X	X
831	willow oak	*Quercus*	*phellos*	13	4	X	X	X	X
832	chestnut oak	*Quercus*	*prinus*	12	4	X	X	X	X
833	northern red oak	*Quercus*	*rubra*	11	4	X	X	X	X
834	Shumard oak	*Quercus*	*shumardii*	11	4	X	X	X	X
835	post oak	*Quercus*	*stellata*	12	4	X	X	X	X
836	Delta post oak	*Quercus*	*stellata* var. *mississippiensis*	12	4	.	.	X	.
837	black oak	*Quercus*	*velutina*	13	4	X	X	X	X
838	live oak	*Quercus*	*virginiana*	12	4	.	.	X	X
840	bluejack oak	*Quercus*	*incana*	28	4	.	X	X	X
899	scrub oak	*Quercus*	sp.	28	4	.	.	.	X
901	black locust	*Robinia*	*psuedoacacia*	27	4	X	X	X	X
920	willow	*Salix*	sp.	26	3	.	X	X	X
921	peachleaf willow	*Salix*	*amygdaloides*	28	3	X	.	.	.
922	black willow	*Salix*	*nigra*	26	3	X	X	.	.
923	diamond willow	*Salix*	*eriocephala*	28	3	X	.	.	.
925	Chinese tallowtree	*Sapium*	*sebiferum*	28	4	.	.	X	.
931	sassafras	*Sassafras*	*albidum*	26	3	X	X	X	X
935	American mountain-ash	*Sorbus*	*americana*	28	4	X	X	.	X
936	European mountain-ash	*Sorbus*	*aucuparia*	28	4	.	X	.	.
950	basswood	*Tilia*	sp.	23	3	.	X	.	X
951	American basswood	*Tilia*	*americana*	23	3	X	X	X	.
952	white basswood	*Tilia*	*heterophylla*	23	3	X	X	X	.
970	elm	*Ulmus*	sp.	26	3	.	X	.	.

*Blackjack oak is given a species group code of 28 in States inventoried by the Southeastern FIA project.

(table 6 continued on next page)

(table 6 continued)

SPP	Common name	Genus	Species	SPPGRP	Core table group	Species occurrence by FIA project NC	NE	SO	SE
971	winged elm	*Ulmus*	*alata*	26	3	X	X	X	.
972	American elm	*Ulmus*	*americana*	26	3	X	X	X	.
973	cedar elm	*Ulmus*	*crassifolia*	26	3	.	.	X	.
974	Siberian elm	*Ulmus*	*pumila*	26	3	X	.	X	.
975	slippery elm	*Ulmus*	*rubra*	26	3	X	X	X	.
976	September elm	*Ulmus*	*serotina*	26	3	.	.	X	.
977	rock elm	*Ulmus*	*thomasii*	27	4	X	X	X	.
980	tung-oil tree	*Aleurites*	*fordii*	28	4	.	.	X	.
981	sparkleberry	*Vaccinium*	*arboreum*	28	4	.	.	X	.
983	chinaberry	*Melia*	*azedarach*	28	4	.	.	X	X
984	water-elm	*Planera*	*aquatica*	28	4	.	.	X	X
985	smoketree	*Cotinus*	*obovatus*	28	4	.	.	X	.
986	mesquite	*Prosopis*	sp.	28	4	.	.	X	.
999	unknown or not listed			28	4	X	.	X	X

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Hansen, Mark H.; Frieswyk, Thomas; Glover, Joseph F.; Kelly, John F. 1992. **The Eastwide forest inventory data base: users manual.** Gen. Tech. Rep. NC-151. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 48 p.

Describes the standard Eastwide Data base (EWDB) structure. This computer file structure was developed to provide consistent data on the forest resources of the Eastern United States. These data files are available to the public.

KEY WORDS: Plot measurements, inventory methods, data processing, data management, information management systems.

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